

CCD-TR317/TR517 CCD-TRV17/TRV37/TRV47/TRV57/ TRV57P/TRV67/TRV87/TRV87P RMT-708

SERVICE MANUAL

Self Diagnosis
Supported model

Ver 1.4 2004. 05

Handycam
Handycam Vision™

video 8 **XR**

video Hi8

video Hi8 **XR**

InfoLITHIUM™
SERIES

B200 MECHANISM



Photo : CCD-TRV87

US Model

CCD-TR517/TRV37/TRV57/TRV67/TRV87

Canadian Model

CCD-TR517/TRV17/TRV37/TRV57/TRV87

E Model

CCD-TR317/TR517/TRV37/
TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P

Hong Kong Model

Korea Model

CCD-TR317/TRV47/TRV57/
TRV67/TRV87

Brazilian Model

CCD-TR317/TR517/TRV37/TRV67

Argentina Model

CCD-TR517/TRV37/TRV67

Tourist Model

CCD-TRV47/TRV57/TRV67/TRV87

For MECHANISM ADJUSTMENT, refer to
the "8mm Video MECHANICAL
ADJUSTMENT MANUAL VII" (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system

2 rotary heads

Helical scanning FM system

Audio recording system

Rotary heads, FM system

Video signal

NTSC color, EIA standards

Usable cassette

8mm video format cassette

CCD-TR317/TR517/TRV17/TRV37/
TRV47/TRV57/TRV57P: Standard 8

CCD-TRV67/TRV87/TRV87P:

Hi8 or standard 8

Recording/playback time (using

120 min. cassette)

SP mode: 2 hours

LP mode: 4 hours

Fastforward/rewind time (using

120 min. cassette)

Approx. 5 min.

Viewfinder

Electric viewfinder

CCD-TR317/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/
TRV87P: monochrome

CCD-TR517: color

Image device

CCD-TR317/TR517/TRV17/
TRV37/TRV47: 1/6 inch CCD

(Charge Coupled Device)

CCD-TRV57/TRV57P/TRV67/
TRV87/TRV87P:

1/4 inch CCD (Charge Coupled

Device)

CCD-TR317/TR517/
TRV17/TRV37/TRV47:

Approx. 270,000 pixels

(Effective: Approx. 250,000 pixels)

CCD-TRV57/TRV57P/TRV67:

Approx. 320,000 pixels

(Effective: Approx. 200,000 pixels)

CCD-TRV87/TRV87P:

Approx. 470,000 pixels

(Effective: Approx. 300,000 pixels)

Lens

Combined power zoom lens

Filter diameter 1 7/16 in. (37 mm)

CCD-TRV17:

20× (Optical), 80× (Digital)

CCD-TR317/TR517/TRV37/TRV47:

20× (Optical), 200× (Digital)

CCD-TRV57/TRV57P/TRV67/
TRV87/TRV87P:

20× (Optical), 360× (Digital)

Focal length

5/32 - 2 7/8 in. (3.6 - 72 mm)

When converted to a 35 mm still

camera

CCD-TR317/TR517/
TRV17/TRV37/TRV47:

2 - 40 6/8 in. (51.8 - 1036 mm)

CCD-TRV57/TRV57P/TRV67/
TRV87/TRV87P:

1 5/8 - 32 3/8 in. (41 - 820 mm)

Color temperature

Auto

Minimum illumination

CCD-TR317/TR517/
TRV17/TRV37/TRV47:

1 lux (F 1.4)

CCD-TRV57/TRV57P/TRV67:

0.4 lux (F 1.4)

CCD-TRV87/TRV87P:

0.6 lux (F 1.4)

0 lux (in the NightShot mode)*

* Objects unable to be seen due to

the dark can be shot with

infrared lighting.

Input/output connectors

5 video input (CCD-TRV87/ TRV87P only)/ output (CCD-TRV67/ TRV87/TRV87P only)

4-pin mini DIN

Luminance signal: 1 Vp-p,

75 ohms, unbalanced

Chrominance signal: 0.286 Vp-p,

75 ohms, unbalanced

Video input (CCD-TRV87/ TRV87P only)/ output

Phono jack, 1 Vp-p, 75 ohms,

unbalanced

Audio input (CCD-TRV87/ TRV87P only)/ output

CCD-TR317/TR517/TRV17/
TRV37/TRV47/TRV57/
TRV57P/TRV67:

Monaural, phone jack, 327 mV

CCD-TRV87/TRV87P:

Phono jacks (2: stereo L and R)

327 mV, (at output impedance

47 kilohms) impedance less than

2.2 kilohms

RFU DC OUT

Special minijack, DC 5V

Headphone jack (CCD-TRV87/ TRV87P only)

Stereo minijack (ø 3.5 mm)

Earphone jack (CCD-TRV17/TRV37/ TRV47/TRV57/TRV57P/TRV67 only)

Monaural minijack (ø 3.5 mm)

LANC control jack

Stereo mini-minijack (ø 2.5 mm)

MIC jack

CCD-TR317/TR517/TRV17/
TRV37/TRV47/TRV57/
TRV57P/TRV67:

Monaural minijack (ø 3.5 mm)

CCD-TRV87/TRV87P:

Stereo minijack (ø 3.5 mm)

— Continued on next page —

8 VIDEO CAMERA RECORDER

CCD-TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P

Hi8 VIDEO CAMERA RECORDER

CCD-TRV67/TRV87/TRV87P



SONY®

LCD screen

(CCD-TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/
TRV87/TRV87P only)

Picture

2.5 inches measured diagonally
2 × 1 1/2 in. (50.3 × 37.4 mm)

Total dot number
61,600 (280 × 220)

General

Power requirements

7.2 V (battery pack)

8.4 V (AC power adaptor)

Average power consumption

(when using the battery pack)

During camera recording using

CCD-TR317: 2.3W

CCD-TR517: 1.9W

LCD

CCD-TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67:

2.7W

CCD-TRV87/TRV87P: 2.8W

Viewfinder

CCD-TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67:

2.3W

CCD-TRV87/TRV87P: 2.4W

Operating temperature

32 °F to 104 °F (0 °C to 40 °C)

Storage temperature

-4 °F to +140 °F (-20 °C to +60 °C)

Dimensions (approx.)

4 1/8 × 4 1/4 × 8 3/8 in.

(102 × 106 × 212 mm) (w/h/d)

Mass (approx.)

CCD-TRV47: 1 lb 13 oz (830 g)

CCD-TRV17/TRV37/TRV57/
TRV57P/TRV67/TRV87/
TRV87P: 1 lb 14 oz (850 g)

CCD-TR317/TR517:

1 lb 10 oz (740 g)

excluding the battery pack, lithium

battery, cassette and shoulder

strap

CCD-TRV47: 2 lb 2 oz (970 g)

CCD-TRV17/TRV37/TRV57/
TRV57P/TRV67/TRV87/
TRV87P: 2 lb 3 oz (990 g)

CCD-TR317/TR517:

1 lb 15 oz (880 g)

including the battery pack

NP-F330, lithium battery CR2025,

cassette and shoulder strap

Supplied accessories

See page 2.

AC power adaptor

Power requirements

100 - 240 V AC, 50/60 Hz

Power consumption

23 W

Output voltage

DC OUT: 8.4 V, 1.5 A in operating

mode

Operating temperature

32 °F to 104 °F (0 °C to 40 °C)

Storage temperature

-4 °F to +140 °F (-20 °C to +60 °C)

Dimensions (approx.)

5 × 1 9/16 × 2 1/2 in.

(125 × 39 × 62 mm) (w/h/d)

excluding projecting parts

Mass (approx.)

9.8 oz (280 g)

excluding power cord

Battery pack

Output voltage

DC 7.2 V

Capacity

5.0 Wh

Dimensions (approx.)

1 9/16 × 13/16 × 2 7/8 in.

(38 × 21 × 71 mm) (w/h/d)

Mass (approx.)

3.4 oz (95 g)

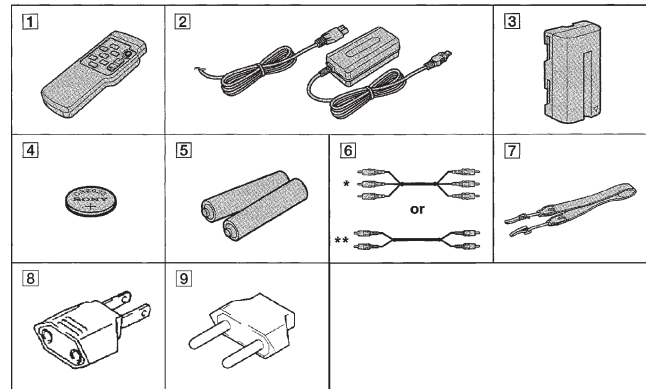
Type

Lithium ion

Design and specifications are
subject to change without notice.

• SUPPLIED ACCESSORIES

Check that the following accessories are supplied with your camcorder.



1 Wireless Remote Commander (1)

CCD-TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P

6 A/V connecting cable (1)

*: CCD-TRV87/TRV87P

** : CCD-TR317/TR517/TRV17/
TRV37/TRV47/TRV57/
TRV57P/TRV67

2 AC-L10A/L10B/L10C AC power adaptor

(1), Power cord (1)

3 NP-F330 battery pack (1)

7 Shoulder strap (1)

4 CR2025 lithium battery (1)

The lithium battery is already installed
in your camcorder.

8 2-pin conversion adaptor (1)

CCD-TR317: E/TR517: E/
TRV37: E/TRV47: E/TRV57: E/
TRV57P/TRV67: E/TRV87: E/
TRV87P

5 Size AA (R6) battery for Remote

Commander (2)

CCD-TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P

9 2-pin conversion adaptor (1)

CCD-TRV47: JE/TRV57: JE/
TRV67: JE /TRV87: JE

• Abbreviation

HK : Hong Kong model

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK \triangle OR DOTTED LINE WITH MARK \triangle ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE \triangle SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing.
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
 - Be careful not to apply force on the conductor when soldering or unsoldering.

Table for difference of function

Model	CCD-TR317	CCD-TR517	CCD-TRV17	CCD-TRV37	CCD-TRV47	CCD-TRV57	CCD-TRV57P	CCD-TRV67	CCD-TRV87	CCD-TRV87P	Remark
Destination	E,HK,KR, BR	US,CND, E,BR,AR	CND	US,CND, E,BR,AR	E,HK,KR, JE	US,CND, E,HK,KR, JE	E	US,E,HK, KR,BR, AR,JE	US,CND, E,HK,KR, JE	E	
Remote commander					RMT-708	RMT-708	RMT-708	RMT-708	RMT-708	RMT-708	RMT-708: with IC301 of MA-374/375 board. Hi8: with S-VIDEO jack.
8/Hi8	8	8	8	8	8	8	8	Hi8	Hi8	Hi8	
CCD imager	510H	510H	510H	510H	510H	510H	510H	510H	760H	760H	
CCD imager size (inch)	1/6	1/6	1/6	1/6	1/6	1/4	1/4	1/4	1/4	1/4	
Lens Optical	20×	20×	20×	20×	20×	20×	20×	20×	20×	20×	
Digital zoom 1	40×	40×	40×	40×	40×	40×	40×	40×	40×	40×	
Digital zoom 2	200×	200×	80×	200×	200×	360×	360×	360×	360×	360×	
EVF	B/W	Color	B/W	B/W	B/W	B/W	B/W	B/W	B/W	B/W	B/W : with VF-129 board. Color : with VF-141, LB-62 board.
LCD panel (inch)	○	○	○	○	○	○	○	○	○	○	2.5: with PD-117 board.
LCD, Character											
Back light, LCD											
VTR REC											
Steady shot						○	○	○	○	○	○: with IC451 of SE-101 board.
DIGITAL EFFECT											○: with IC203 of VC-234 board.
Photo mode											○: with IC203 of VC-234 board.
Audio system	Mono	Mono	Mono	Mono	Mono	Mono	Mono	Mono	Stereo	Stereo	
Headphone jack			○	○	○	○	○	○	○	○	○: with J451 of SE-101 board.
Night shot	○	○	○	○	○	○	○	○	SUPER	SUPER	SUPER: with IC203 of VC-234 board.
LASER LINK											○: with IC751 of VC-234 board.
Video Light			○	○		○	○	○	○	○	○: with VL-29 board.
CD board	CD-239						CD-240				
CF board	CF-66						CF-67				
EJ board	EJ-29						EI-30				
PD board							PD-117				
MA board		MA-374					MA-375				
PJ board		PJ-99					PJ-100				
SE board							SE-101				
VF board							VF-129				
LB board		VF-141 LB-62									
VL board							VL-29				

• Abbreviation
 CND : Canadian model BR : Brazilian model
 HK : Hong Kong model AR : Argentina model
 KR : Korea model JE : Tourist model

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* Parts reference sheet and color reproduction frame are shown on page 282 and 283.

SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.

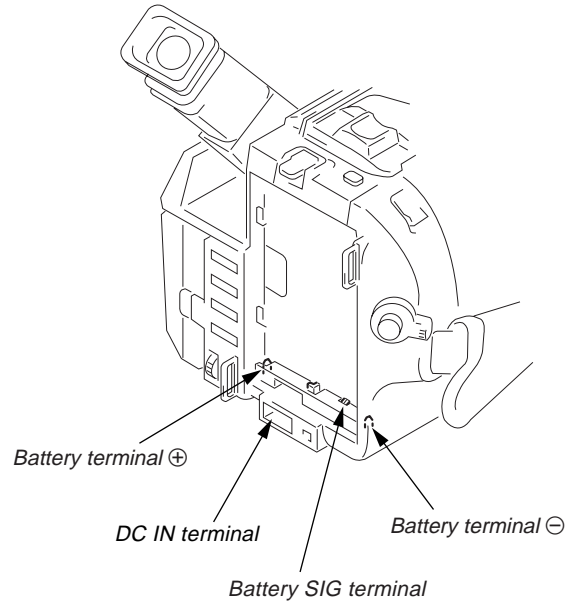
The following two methods are available to prevent this. Take note of which to use during repairs.

Method 1.

Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the "ADJ" side.

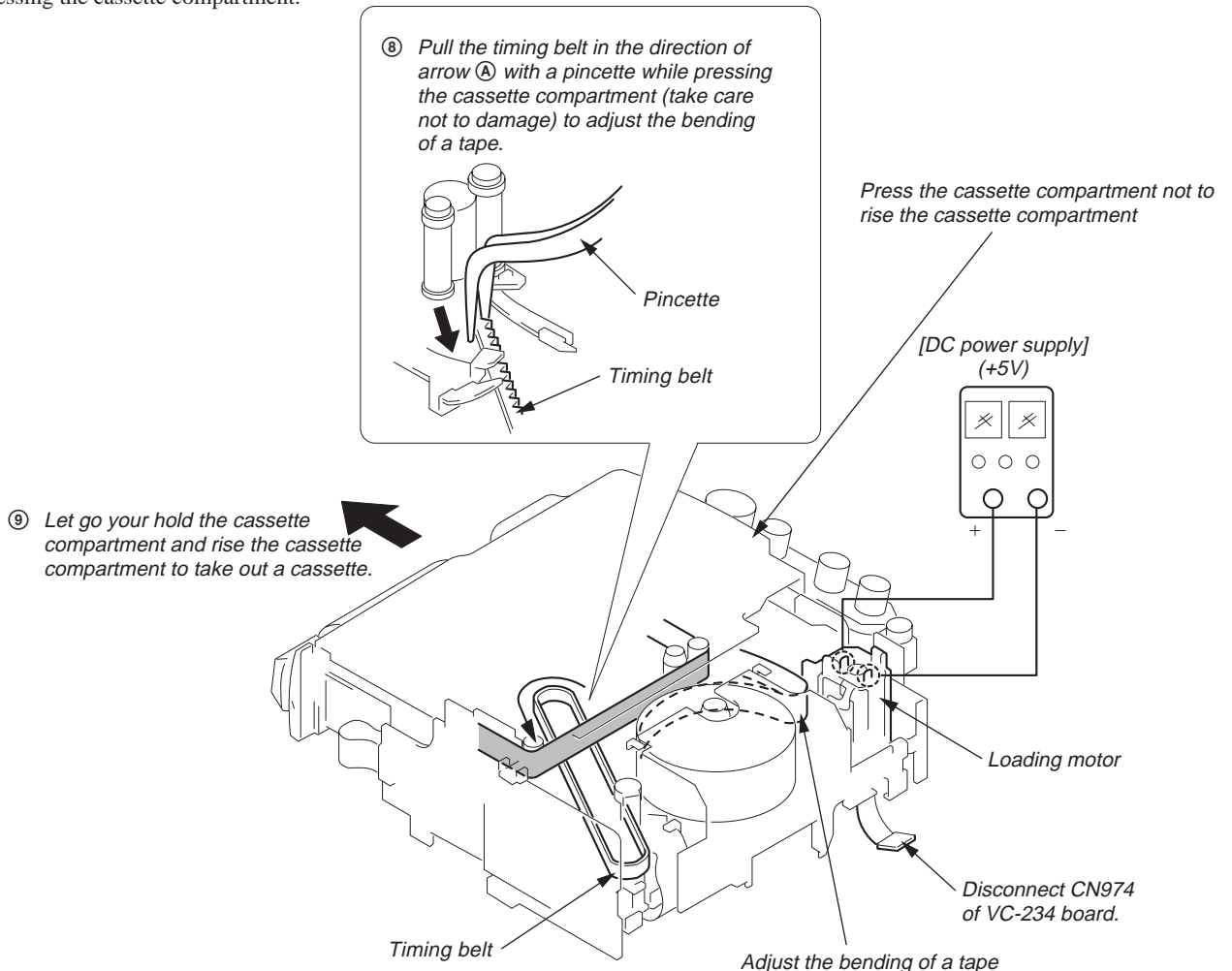
Method 2.

Use the DC IN terminal. (Use the AC power adaptor.)



2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

- ① Refer to 2-2. to remove the front panel block assembly.
- ② Refer to 2-3. to remove the cabinet (R) block assembly.
- ③ Refer to 2-4. to remove the cassette lid assembly.
- ④ Refer to 2-4. to remove the battery panel block assembly.
- ⑤ Refer to 2-4. to remove the cabinet (L) assembly.
- ⑥ Disconnect CN974 of VC-234 board.
- ⑦ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette compartment.



SELF-DIAGNOSIS FUNCTION

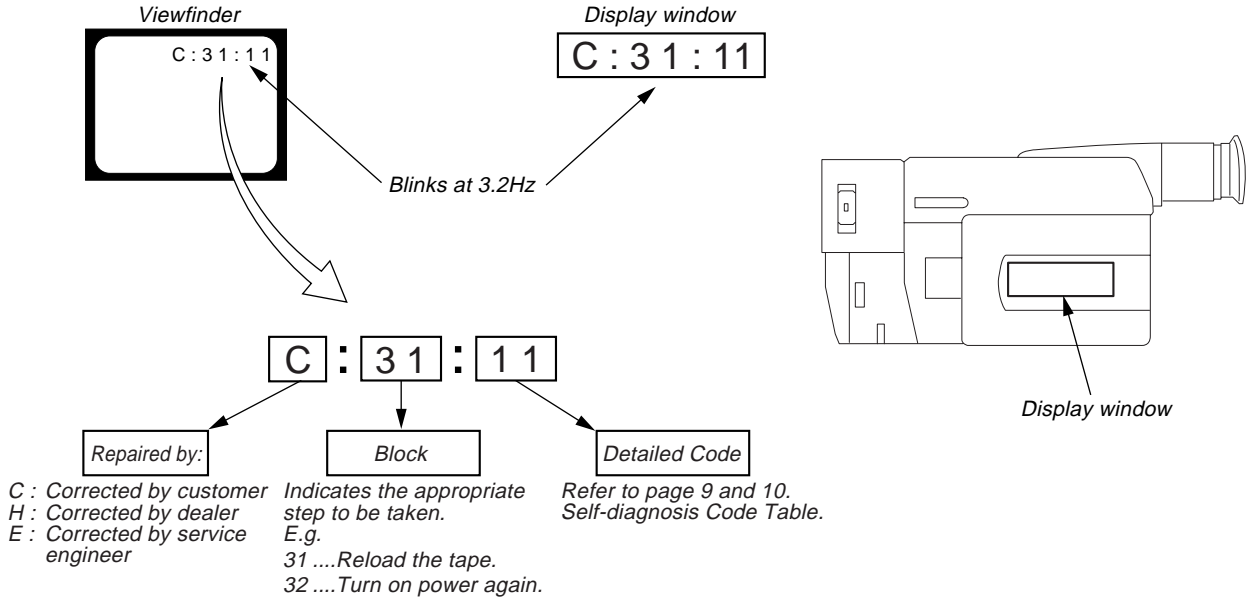
1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or Display window what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or Display window shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.

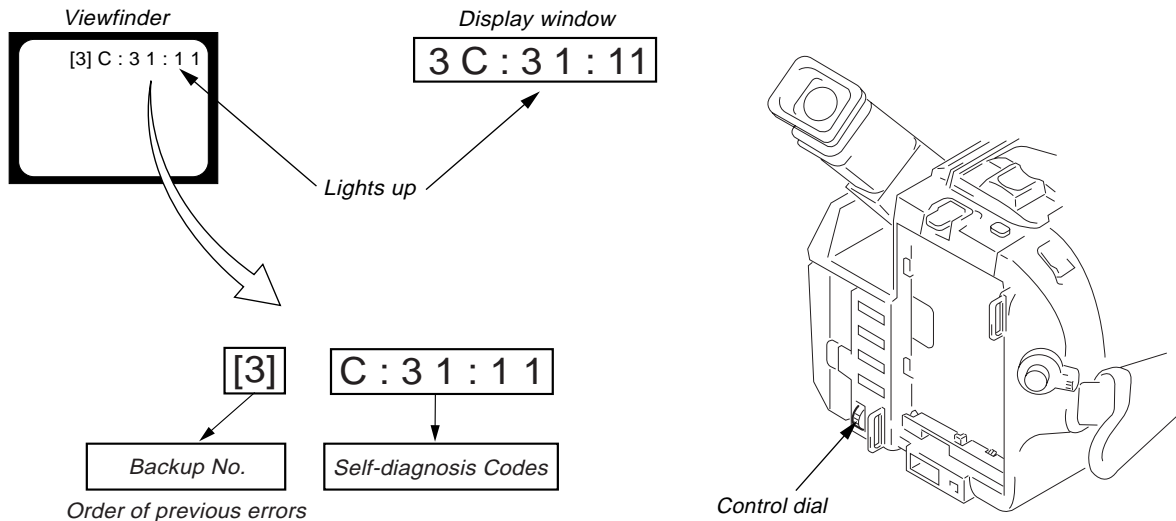


3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the “STOP” key, set the switch from OFF to “VTR or PLAYER”, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

- | | |
|----------------------------|------------------------------|
| [1] : Occurred first time | [4] : Occurred fourth time |
| [2] : Occurred second time | [5] : Occurred fifth time |
| [3] : Occurred third time | [6] : Occurred the last time |

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The “self-diagnosis display” data will be backed up by the coin-type lithium battery (CF-66/67 board BH001). When this coin-type lithium battery is disconnected, the “self-diagnosis display” data will be lost by initialization.

4. Self-diagnosis Code Table

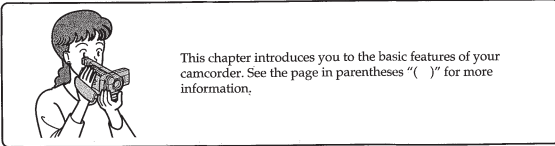
Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	0 4	0 0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	2 1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2 2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3 1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3 1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3 1	2 2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	2 3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3 1	3 0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3 1	3 1	FG fault during normal capstan operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 1	PG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3 1	4 2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 3	PG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 1	4 4	Phase fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3 2	1 0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	1 1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	2 3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	3 1	FG fault during normal capstan operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 1	PG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 3	PG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	4 4	Phase fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
E	6 1	0 0	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑫ of CN551 of VC-234 board) when focusing is performed when the control dial is rotated in the focus manual mode and the focus motor drive circuit (IC551 of VC-234 board) when the focusing is not performed. Note: Use the remote commander RM-95 only for the model without the focus dial.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ⑭ of CN551 of VC-234 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC551 of VC-234 board) when zooming is not performed.
E	6 2	0 0	Handshake correction function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE451 of SE-101 board) peripheral circuits.
E	6 2	0 1	Handshake correction function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE452 of SE-101 board) peripheral circuits.

SECTION 1
GENERAL

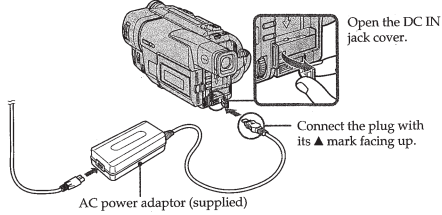
This section is extracted from instruction manual. (3-868-323-11)

Quick Start Guide



1 Connecting the power cord (p. 14)

Use the battery pack when using your camcorder outdoors (p. 9).



2 Inserting a cassette (p. 15)

1 Slide EJECT in the direction of the arrow while pressing the small blue button.

2 Insert a cassette into the cassette compartment with its window facing out.

3 Close the cassette compartment by pressing the (PUSH) mark on the cassette compartment. The cassette compartment automatically goes down.

3 Recording a picture (p. 16)

1 Set the POWER switch to CAMERA while pressing the small green button.

3 Turn STANDBY to STANDBY. The picture appears on the LCD screen.

2 Open the LCD panel while pressing OPEN.

Viewfinder
When the LCD panel is closed, use the viewfinder placing your eye against its eyecup. The picture in the viewfinder is black and white.

4 Press the red button. Your camcorder starts recording. To stop recording, press the red button again.

4 Monitoring the playback picture on the LCD screen (p. 24)

1 Set the POWER switch to VTR (CCD-TRV87) or PLAYER (CCD-TRV37/TRV57/TRV67) while pressing the small green button.

2 Press ◀◀ to rewind the tape.

3 Press ▶▶ to start playback.

NOTE
Do not pick up your camcorder by holding the viewfinder, the LCD panel or the battery pack.

Quick Start Guide

4

Quick Start Guide

5

— Getting started —
Using this manual

The instructions in this manual are for the four models listed in the table below. Before you start reading this manual and operating your camcorder, check the model number by looking at the bottom of your camcorder. The CCD-TRV87 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TRV87 only."

As you read through this manual, buttons and settings on your camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
When you carry out an operation, you can hear a beep sound to indicate that the operation is being carried out.

Types of differences

CCD-	TRV37	TRV57	TRV67	TRV87
System	[a]	[a]	HIB	HIB
VIDEO/AUDIO IN*	—	—	—	●
S VIDEO	—	—	●**	●
Digital zoom	200x	360x	360x	360x
Super NightShot	—	—	—	●
SteadyShot	—	●	●	●
Remote sensor	—	●	●	●
SUPER LASER LINK	—	—	—	●
Photo mode	—	—	—	●
PROGRAM AE	●	●	●	●
Low lux mode	—	—	—	●
Digital effect	—	—	—	●
Fader function	●	●	●	●
OVERLAP	—	—	—	●
WIPE	—	—	—	●
Audio	monaural	monaural	monaural	stereo

● Provided
— Not provided

* The models without VIDEO/AUDIO IN have CAMERA, OFF and PLAYER mode on the POWER switch.

** Output only

Using this manual

Note on TV color systems

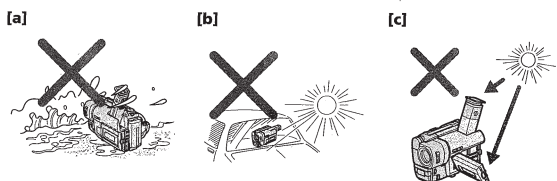
TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

Copyright precautions

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

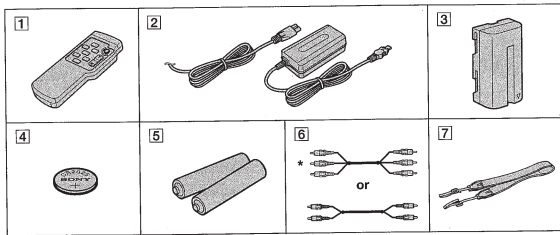
Precautions on camcorder care

- The LCD screen and the viewfinder are manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue, green or white) that constantly appear on the LCD screen and in the viewfinder. These points occur normally in the manufacturing process and do not affect the recorded picture in any way. Effective ratio of pixels and/or screen are 99.99% or more.
- Do not let your camcorder get wet. Keep your camcorder away from rain and sea water. Letting your camcorder get wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired [a].
- Never leave your camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight [b].
- Do not place your camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder or the LCD screen may be damaged [c].



Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.



- | | |
|--|---|
| <p>1 Wireless Remote Commander (1) (p. 84)
CCD-TRV57/TRV67/TRV87 only</p> <p>2 AC-L10A/L10B/L10C AC power adaptor (1), Power cord (1) (p. 10)</p> <p>3 NP-F330 battery pack (1) (p. 9, 10)</p> <p>4 CR2025 lithium battery (1) (p. 65)
The lithium battery is already installed in your camcorder.</p> | <p>5 Size AA (R6) battery for Remote Commander (2) (p. 84)
CCD-TRV57/TRV67/TRV87 only</p> <p>6 A/V connecting cable (1) (p. 27)
* for stereo model</p> <p>7 Shoulder strap (1) (p. 81)</p> |
|--|---|

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

8

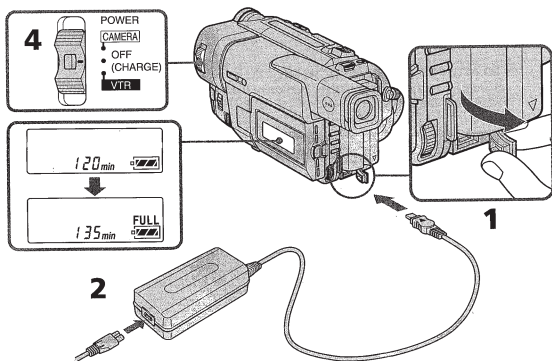
Step 1 Preparing the power supply

Charging the battery pack

Use the battery pack after charging it for your camcorder. Your camcorder operates only with the "InfoLITHIUM" battery pack (L series).

- (1) Open the DC IN jack cover and connect the AC power adaptor supplied with your camcorder to the DC IN jack with the plug's ▲ mark facing up.
- (2) Connect the power cord to the AC power adaptor.
- (3) Connect the power cord to a wall outlet.
- (4) Set the POWER switch to OFF (CHARGE). Charging begins. The remaining battery time is indicated in minutes on the display window.

When the remaining battery indicator changes to normal charge is completed. To fully charge the battery (full charge), leave the battery pack attached for about 1 hour after normal charge is completed until FULL appears in the display window. Fully charging the battery allows you to use the battery longer than usual.



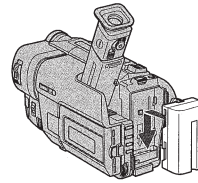
10

Step 1 Preparing the power supply

Installing the battery pack

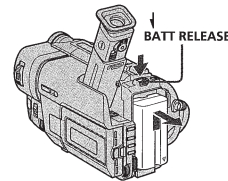
Install the battery pack to use your camcorder outdoors.

Slide the battery pack down until it clicks.



To remove the battery pack

Slide the battery pack out in the direction of the arrow while pressing ↓ BATT RELEASE down.



After installing the battery pack

Do not carry your camcorder by holding the battery pack. If you do so, the battery pack may slide off your camcorder unintentionally, damaging your camcorder.

Getting started

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Step 1 Preparing the power supply

Notes

- Prevent metallic objects from coming into contact with the metal parts of the DC plug of the AC power adaptor. This may cause a short-circuit, damaging the AC power adaptor.
- Keep the battery pack dry.
- When the battery pack is not to be used for a long time, charge the battery pack once fully and then use it until it fully discharges again. Keep the battery pack in a cool place.

Remaining battery time indicator

The remaining battery time indicator in the display window roughly indicates the recording time with the viewfinder.

Battery pack

The battery pack is charged a little before it leaves the factory.

Until your camcorder calculates the actual remaining battery time

"--- min" appears in the display window.

Getting started

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Step 1 Preparing the power supply

Charging time

Battery pack	Full charge (Normal charge)
NP-F330 (supplied)	150 (90)
NP-F530 / F550	210 (150)
NP-F730 / F730H / F750	300 (240)
NP-F930 / F950	390 (330)
NP-F960	420 (360)

Approximate number of minutes to charge an empty battery pack

Recording time

CCD-TRV37/TRV57/TRV67

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous*	Typical**	Continuous*	Typical**
NP-F330 (supplied)	140 (125)	75 (70)	120 (105)	65 (55)
NP-F530	245 (220)	135 (120)	205 (180)	110 (100)
NP-F550	280 (250)	155 (135)	240 (210)	130 (115)
NP-F730	500 (450)	275 (245)	410 (370)	225 (205)
NP-F730H / F750	580 (525)	320 (290)	490 (440)	270 (240)
NP-F930	780 (705)	430 (385)	650 (585)	355 (320)
NP-F950	900 (790)	495 (435)	750 (675)	410 (370)
NP-F960	1035 (930)	570 (510)	880 (790)	490 (440)

CCD-TRV87

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous*	Typical**	Continuous*	Typical**
NP-F330 (supplied)	135 (120)	75 (65)	115 (100)	65 (55)
NP-F530	235 (210)	130 (115)	195 (170)	110 (95)
NP-F550	270 (240)	150 (130)	230 (200)	125 (110)
NP-F730	475 (425)	260 (235)	395 (355)	215 (195)
NP-F730H / F750	550 (500)	300 (275)	470 (425)	260 (235)
NP-F930	745 (670)	410 (370)	625 (560)	345 (310)
NP-F950	850 (760)	465 (420)	725 (650)	400 (355)
NP-F960	990 (890)	545 (490)	850 (765)	470 (420)

Approximate number of minutes when you use a fully charged battery

Numbers in parentheses “()” indicate the time using a normally charged battery.

- * Approximate continuous recording time at 77°F (25°C). The battery life will be shorter if you use your camcorder in a cold environment.
- ** Approximate number of minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

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Step 1 Preparing the power supply

Playing time

CCD-TRV37/TRV57/TRV67

Battery pack	Playing time on LCD screen	Playing time with LCD closed
NP-F330 (supplied)	125 (110)	145 (130)
NP-F530	215 (190)	260 (230)
NP-F550	250 (220)	295 (260)
NP-F730	430 (385)	525 (475)
NP-F730H / F750	510 (460)	610 (550)
NP-F930	680 (610)	825 (740)
NP-F950	780 (700)	930 (830)
NP-F960	915 (820)	1090 (980)

CCD-TRV87

Battery pack	Playing time on LCD screen	Playing time with LCD closed
NP-F330 (supplied)	120 (105)	140 (125)
NP-F530	205 (180)	245 (220)
NP-F550	240 (210)	280 (250)
NP-F730	410 (370)	500 (450)
NP-F730H / F750	490 (440)	580 (525)
NP-F930	680 (585)	780 (705)
NP-F950	750 (675)	900 (790)
NP-F960	880 (790)	1035 (930)

Approximate number of minutes when you use a fully charged battery

Numbers in parentheses “()” indicate the time using a normally charged battery. The battery life will be shorter if you use your camcorder in a cold environment.


After charging the battery pack

Disconnect the AC power adaptor from the DC IN jack on your camcorder.

Note on the remaining battery time indicator during recording

The indicator may not be correct, depending on the conditions in which you are recording. When you close the LCD panel and open it again, it takes about 1 minute for the correct remaining battery time to be displayed.

What is “InfoLITHIUM”?

The “InfoLITHIUM” is a lithium ion battery pack which can exchange data such as battery consumption with compatible electronic equipment. This unit is compatible with the “InfoLITHIUM” battery pack (L series). Your camcorder operates only with the “InfoLITHIUM” battery. “InfoLITHIUM” L series battery packs have the  mark.

“InfoLITHIUM” is a trademark of Sony Corporation.

Getting started

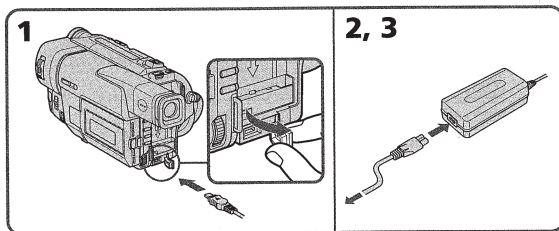
13

Step 1 Preparing the power supply

Connecting to a wall outlet

When you use your camcorder for a long time, we recommend that you power it from a wall outlet using the AC power adaptor.

- (1) Open the DC IN jack cover, and connect the AC power adaptor to the DC IN jack on your camcorder with the plug's ▲ mark facing up.
- (2) Connect the power cord to the AC power adaptor.
- (3) Connect the power cord to a wall outlet.



PRECAUTION

The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes

- The AC power adaptor can supply power even if the battery pack is attached to your camcorder.
- The DC IN jack has “source priority”. This means that the battery pack cannot supply any power if the power cord is connected to the DC IN jack, even when the power cord is not plugged into a wall outlet.


Using a car battery

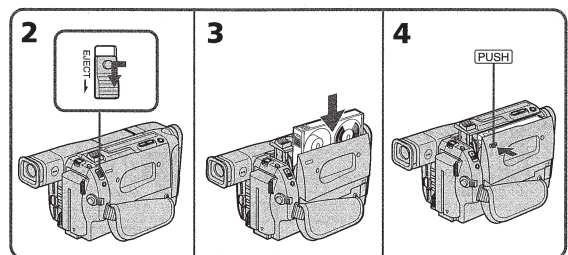
Use Sony DC Adaptor/Charger (not supplied).

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Step 2 Inserting a cassette

When you want to record in the Hi8 system, use Hi8 video cassette **Hi8**. (CCD-TRV67 / TRV87 only)

- (1) Prepare the power supply (p. 9).
- (2) Slide EJECT in the direction of the arrow while pressing the small blue button. The cassette compartment automatically lifts up and opens.
- (3) Insert a cassette with its window facing out and the tab on the cassette up.
- (4) Close the cassette compartment by pressing the  mark on the cassette compartment. The cassette compartment automatically goes down.



To eject a cassette

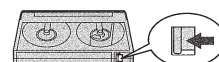
Slide EJECT in the direction of the arrow while pressing the small blue button.

Note

Do not press the cassette compartment down. Doing so may cause malfunction.

To prevent accidental erasure

Slide the write-protect tab on the cassette to expose the red mark.



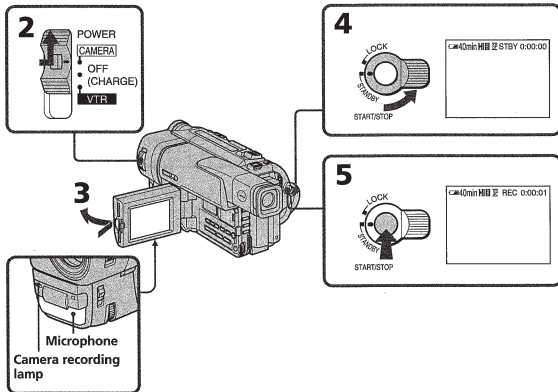
Getting started

15

Recording a picture

Your camcorder automatically focuses for you.

- (1) Install the power source and insert a cassette. See "Step 1" and "Step 2" for more information (p. 9 to 15).
- (2) Set the POWER switch to CAMERA while pressing the small green button. The lens cover opens.
- (3) Open the LCD panel while pressing OPEN. The viewfinder automatically turns off.
- (4) Turn STANDBY to STANDBY.
- (5) Press START/STOP. Your camcorder starts recording. The "REC" indicator appears. The camera recording lamp located on the front of your camcorder lights up. To stop recording, press START/STOP again. The recording lamp lights up in the viewfinder when you record with the viewfinder.



Note
Fasten the grip strap firmly. Do not touch the built-in microphone during recording.

To enable smooth transition
You can make the transition between the last scene you recorded and the next scene smooth as long as you do not eject the cassette. When you exchange the battery pack in the recording mode, set STANDBY to LOCK.

Recording a picture

If you leave your camcorder in the standby mode for 5 minutes while the cassette is inserted

Your camcorder automatically turns off. This is to save battery power and to prevent battery and tape wear. To resume the standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

To set the counter to 0:00:00
Press COUNTER RESET (p. 82).

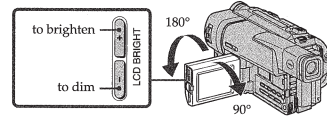
After recording

- (1) Turn STANDBY down to LOCK.
- (2) Close the LCD panel.
- (3) Eject the cassette.
- (4) Set the POWER switch to OFF (CHARGE).
- (5) Remove the battery pack.

Adjusting the LCD screen

To adjust the brightness of the LCD screen, press either of the two buttons on LCD BRIGHT. The LCD panel moves about 90 degrees to the viewfinder side and about 180 degrees to the lens side.

If you turn the LCD panel over so that it faces the other way, the indicator appears in the viewfinder and on the LCD screen (**Mirror mode**).



When closing the LCD panel, set it vertically until it clicks, and swing it into the camcorder body.

Note
When using the LCD screen except in the mirror mode, the viewfinder automatically turns off.

When you use the LCD screen outdoors in direct sunlight
The LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

Picture in the mirror mode
The picture on the LCD is a mirror-image. However, the picture will be normal when recorded.

During recording in the mirror mode
DATE and TIME on your camcorder do not work.

Indicators in the mirror mode

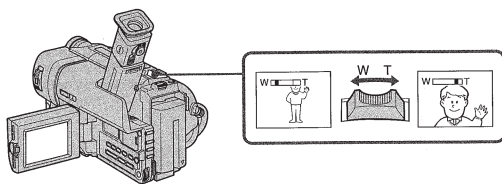
- The STBY indicator appears as and REC as . Some of the other indicators appear mirror-reversed and others are not displayed.
- The date appears mirror-reversed when the auto date function is working. However, the date will be normal when recorded.

Recording a picture

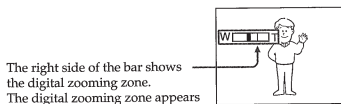
Using the zoom feature

Move the power zoom lever a little for a slower zoom. Move it further for a faster zoom. Using the zoom function sparingly results in better-looking recordings.

"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)



Zoom greater than 20x is performed digitally.
To activate digital zoom, select the digital zoom power in D ZOOM in the menu settings (p. 55)
The picture quality deteriorates as the picture is processed digitally.



The right side of the bar shows the digital zooming zone. The digital zooming zone appears when you select the digital zoom power in D ZOOM in the menu settings.

When you shoot close to a subject
If you cannot get a sharp focus, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 feet 5/8 inch (about 80 cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1 cm) away in the wide-angle position.

Notes on digital zoom

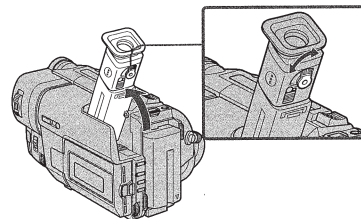
- Digital zoom starts to function when zoom exceeds 20x.
- The picture quality deteriorates as you go toward the "T" side.

Recording a picture

To record pictures with the viewfinder - adjusting the viewfinder

If you record pictures with the LCD panel closed, check the picture with the viewfinder. Adjust the viewfinder lens to your eyesight so that the indicators in the viewfinder come into sharp focus.

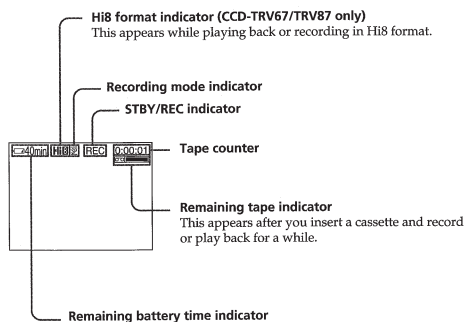
Lift up the viewfinder and move the viewfinder lens adjustment lever.



Recording a picture

Indicators displayed in the recording mode

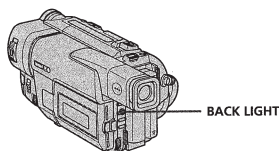
The indicators are not recorded on tape.



Shooting backlit subjects (BACK LIGHT)

When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.

Press BACK LIGHT in the recording or standby mode. The indicator appears in the viewfinder or on the LCD screen. To cancel, press BACK LIGHT again.



If you press EXPOSURE when shooting backlit subjects
The backlight function will be canceled.

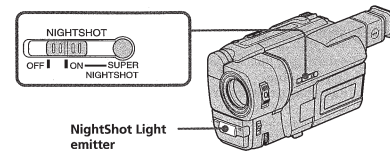
20

Recording a picture

Shooting in the dark (NightShot)

The NightShot function enables you to shoot a subject in a dark place. For example, you can satisfactorily record the environment of nocturnal animals for observation when you use this function.

While your camcorder is in the standby mode, slide NIGHTSHOT to ON. and "NIGHTSHOT" indicators flash on the LCD screen or in the viewfinder. To cancel the NightShot function, slide NIGHTSHOT to OFF.



Using the Super NightShot mode

– CCD-TRV87 only

The Super NightShot mode makes subjects more than four times brighter than those recorded in the NightShot mode.

- Slide NIGHTSHOT to ON in the standby mode. indicator appears on the LCD screen or in the viewfinder.
- Press SUPER NIGHTSHOT. and "SUPER NIGHTSHOT" indicators flash on the LCD screen or in the viewfinder. To cancel the Super NightShot mode, press SUPER NIGHTSHOT again.

Using the NightShot Light

The picture will be clearer with the NightShot Light on. To enable NightShot Light, set N.S.LIGHT to ON in the menu settings (p. 55).

Notes

- Do not use the NightShot function in bright places (ex. outdoors in the daytime). This may cause your camcorder to malfunction.
- When you keep NIGHTSHOT set to ON in normal recording, the picture may be recorded in incorrect or unnatural colors.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.

While using the NightShot function, you can not use the following functions:

- Exposure
- PROGRAM AE
- Fader* (CCD-TRV87 only)
- Digital effect* (CCD-TRV87 only)

* You cannot use these functions only in the Super NightShot mode.

Shutter speed in the Super NightShot mode (CCD-TRV87 only)

The shutter speed will be automatically changed depending on the brightness of the scene.

Recording - Basics

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Recording a picture

The SUPER NIGHTSHOT button does not work (CCD-TRV87 only):

- while the fader function is set or in use
- while the digital effect function is in use
- when NIGHTSHOT is set to OFF

NightShot Light

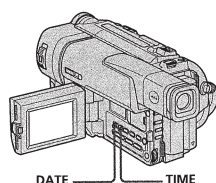
NightShot Light rays are infrared and so are invisible. The maximum shooting distance using the NightShot Light is about 10 feet (3 m). The shooting distance will be twice or more in the Super NightShot mode (CCD-TRV87 only).

Superimposing the date and time on pictures

You can record the date or time displayed in the viewfinder or on the LCD screen superimposed on the picture. Carry out the following operations in the standby or recording mode.

Press DATE to record the date.
Press TIME to record the time.
Press DATE (or TIME), then press TIME (or DATE) to record the date and time.

Press DATE and/or TIME again. The date and/or time indicator disappears.



The default clock setting is set to East Coast Standard Time. You can reset the clock in the menu settings (p. 55).

Note

The date and time indicators recorded manually cannot be deleted.

If you do not record the date and time in the picture

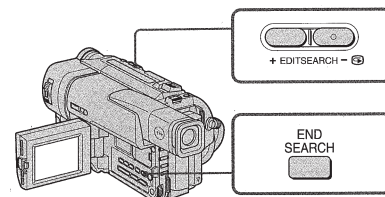
Record the date and time in the black screen as the background for about 10 seconds, then erase the date and time indicators before starting actual recording.

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Checking the recording

– END SEARCH / EDITSEARCH / Rec Review

You can use these buttons to check the recorded picture or shoot so that the transition between the last recorded scene and the next scene you record is smooth.



END SEARCH

You can go to the end of the recorded section after you record.

Press END SEARCH in the standby mode. The last 5 seconds of the recorded section are played back and playback stops. You can monitor the sound from the speaker, headphones (CCD-TRV87 only) or an earphone (CCD-TRV37/TRV57/TRV67 only).

Note

If you start recording after using the end search function, occasionally, the transition between the last scene you recorded and the next scene may not be smooth.

Once you eject the cassette after you have recorded on the tape

The end search function does not work.

EDITSEARCH

You can search for the next recording start point.

Hold down the +/– (⊖) side of EDITSEARCH in the standby mode. The recorded section is played back.

+ : to go forward

– : to go backward

Release EDITSEARCH to stop playback. If you press START/STOP, re-recording begins from the point you released EDITSEARCH. You cannot monitor the sound.

Rec Review

You can check the last recorded section.

Press the – (⊖) side of EDITSEARCH momentarily in the standby mode.

The last few seconds of the recorded section are played back. You can monitor the sound from the speaker, headphones (CCD-TRV87 only) or an earphone (CCD-TRV37/TRV57/TRV67 only).

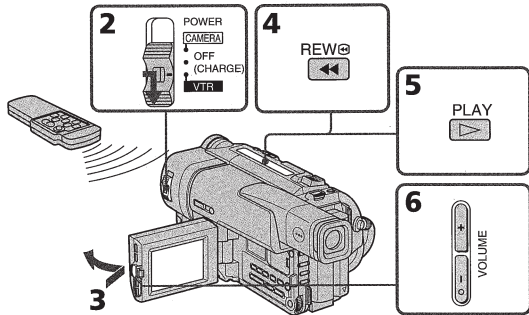
Recording - Basics

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Playing back a tape

You can monitor the playback picture on the LCD screen or in the viewfinder. If you close the LCD panel, you can monitor the playback picture in the viewfinder. You can control playback using the Remote Commander supplied with your camcorder. (CCD-TRV57/TRV67/TRV87 only)

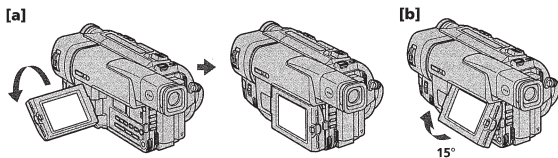
- (1) Install the power source and insert the recorded tape.
- (2) Set the POWER switch to VTR (CCD-TRV87) or PLAYER (CCD-TRV37/TRV57/TRV67) while pressing the small green button.
- (3) Open the LCD panel while pressing OPEN.
- (4) Press ◀◀ to rewind the tape.
- (5) Press ▶▶ to start playback.
- (6) To adjust the volume, press either of the two buttons on VOLUME. The speaker on your camcorder is silent when the LCD panel is closed.



To stop playback
Press ■.

When monitoring on the LCD screen

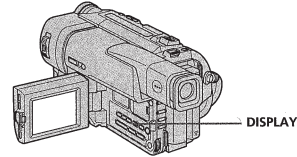
You can turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out [a]. You can adjust the angle of the LCD panel by lifting the LCD panel up by 15 degrees [b].



Playing back a tape

To control the display of the screen indicators

Press DISPLAY on your camcorder or the Remote Commander (CCD-TRV57/TRV67/TRV87 only) supplied with your camcorder. The indicators appear on the LCD screen. To make the indicators disappear, press DISPLAY again.



Playing back a tape

Various playback modes

To operate video control buttons, set the POWER switch to VTR (CCD-TRV87) or PLAYER (CCD-TRV37/TRV57/TRV67 only).

To view a still picture (playback pause)

Press II during playback. To resume playback, press II or ▶.

To advance the tape

Press ▶▶ in the stop mode. To resume normal playback, press ▶.

To rewind the tape

Press ◀◀ in the stop mode. To resume normal playback, press ▶.

To locate a scene monitoring the picture (picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing or rewinding the tape (skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume rewinding or advancing, release the button.

To view the picture at slow speed (slow playback)

— CCD-TRV57/TRV67/TRV87 only

Press ⏪ on the Remote Commander during playback. To resume normal playback, press ▶.

To search the last scene recorded (END SEARCH)

Press END SEARCH in the stop mode. The last 5 seconds of the recorded section plays back and stops.

In the various playback modes

Sound is muted.

When the playback pause mode lasts for 5 minutes

Your camcorder automatically enters the stop mode. To resume playback, press ▶.

If slow playback lasts for about 1 minute (CCD-TRV57/TRV67/TRV87 only)

Your camcorder automatically returns to normal speed.

When you play back a tape recorded in the LP mode

Noise may appear during playback pause mode, slow playback (CCD-TRV57/TRV67/TRV87 only) or picture search.

The tapes recorded in the Hi8 format (CCD-TRV37/TRV57 only)

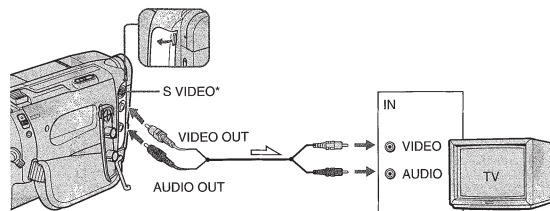
You can play back the tapes recorded in the Hi8 video system on your camcorder.

Viewing the recording on TV

Connect your camcorder to your TV or VCR with the A/V connecting cable supplied with your camcorder to watch the playback picture on the TV screen. You can operate the playback control buttons in the same way as when you monitor playback pictures on the LCD screen. When monitoring the playback picture on the TV screen, we recommend that you power your camcorder from a wall outlet using the AC power adaptor (p. 14). Refer to the operating instructions of your TV or VCR.

Open the jack cover. Connect your camcorder to the TV using the A/V connecting cable. Then, set the TV/VCR selector on the TV to VCR.

CCD-TRV37/TRV57/TRV67

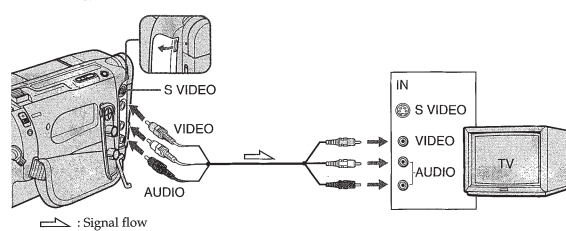


CCD-TRV67

— : Signal flow

* CCD-TRV67 only

CCD-TRV87



— : Signal flow

If your TV is already connected to a VCR

Connect your camcorder to the LINE IN input on the VCR by using the A/V connecting cable supplied with your camcorder. Set the input selector on the VCR to LINE.

Viewing the recording on TV

If your TV or VCR is a monaural type

- CCD-TRV87 only

Connect the yellow plug for video and the white plug for audio on both your camcorder and the TV or the VCR (you do not connect the red plug). With this connection, the sound is monaural.

To connect to a TV or VCR without Video/Audio input jacks

Use an NTSC system RFU adaptor (not supplied). Refer to the operating instructions of your TV or VCR and the RFU adaptor. With an RFU adaptor, the sound is monaural even on stereo models.

If your TV or VCR has an S video jack (CCD-TRV67/TRV87 only)

Connect using an S video cable (not supplied) to obtain high-quality pictures. With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.

Connect the S video cable (not supplied) to the S video jacks on both your camcorder and the TV or the VCR.

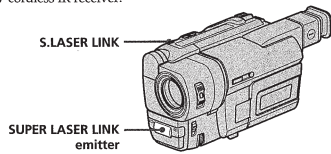
Monitoring the picture from a TV or VCR (CCD-TRV87 only)

You can monitor the picture on the LCD screen. Connect your camcorder to the outputs on the TV or VCR.

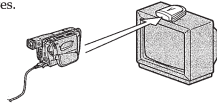
Using the AV cordless IR receiver

- CCD-TRV87 only

Once you connect the AV cordless IR receiver (not supplied) to your TV or VCR, you can easily view the picture on your TV. For details, refer to the operating instructions of the AV cordless IR receiver.



- (1) After connecting your TV and AV cordless IR receiver, set the POWER switch on the AV cordless IR receiver to ON.
- (2) Turn the TV on and set the TV/VCR selector on the TV to VCR.
- (3) Press S.LASER LINK. The lamp of S.LASER LINK lights up.
- (4) Press on your camcorder to start playback.
- (5) Point the SUPER LASER LINK emitter at the AV cordless IR receiver. Adjust the position of your camcorder and the AV cordless IR receiver to obtain clear playback pictures.



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Viewing the recording on TV

To cancel the super laser link function

Press S.LASER LINK. The lamp on the S.LASER LINK button goes out.

If you turn the power off

Super laser link turns off automatically.

If you use a Sony TV

- You can turn on the TV automatically when you press S.LASER LINK or . To do so, set AUTO TV ON to ON in the menu settings and turn the TV's main switch on, then do either of the following:
 - Point the SUPER LASER LINK emitter at the TV's remote sensor and press S.LASER LINK.
 - Turn on super laser link and press .
- You can switch the video input of the TV automatically to the one which the AV cordless IR receiver is connected. To do so, set AUTO TV ON to ON and TV INPUT to the same video input (1, 2, 3) in the menu settings. With some models, however, the picture and sound may be disconnected momentarily when the video input is switched.
- The above feature may not work on some TV models.

Note

When super laser link is activated (the S.LASER LINK button is lit), your camcorder consumes power. Press S.LASER LINK to turn off the super laser link function when it is not needed.

Playback - Basics

- Advanced Recording Operations -

Recording a still image on a tape - Tape Photo recording

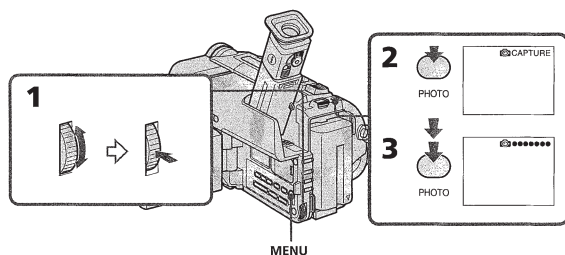
- CCD-TRV87 only

You can record a still picture like a photograph. This mode is useful when you want to record a picture such as a photograph or when you print a picture using a video printer (not supplied).

NORMAL PHOTO This mode records a still picture for about seven seconds.



- (1) While your camcorder is in the standby mode, select the photo mode in the menu settings (p. 55).
- (2) Keep pressing PHOTO lightly until a still picture appears. The CAPTURE indicator appears. Recording does not start yet. To change the still picture, release PHOTO, select a still picture again, and then press and hold PHOTO lightly.
- (3) Press PHOTO deeper. The still picture in the viewfinder or on the LCD screen is recorded for about seven seconds. The sound during those seven seconds is also recorded. The still image is displayed in the viewfinder or on the LCD screen until recording is completed.



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Recording a still image on a tape - Tape Photo recording

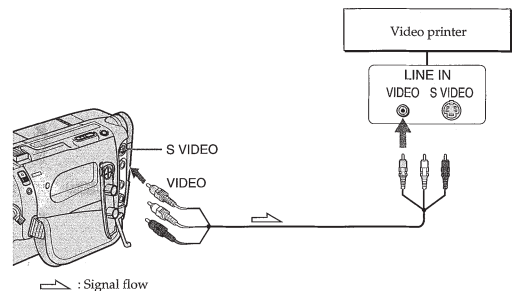
Notes

- During tape photo recording, you cannot change the mode or setting of the following functions:
 - Digital effect
 - Fader
 - PROGRAM AE
 - Picture effect
 - Exposure
 - Wide mode
 - Backlight
 - Super NightShot
- The PHOTO button does not work:
 - while the digital effect function is set or in use.
 - while the fader function is in use.
- When recording a still picture, do not shake your camcorder. The picture may fluctuate.

To use the tape photo recording function during normal CAMERA recording
Press PHOTO deeper. The still picture is then recorded for about seven seconds and your camcorder returns to the standby mode. You cannot select another still picture.

Printing the still picture

You can print a still picture by using the video printer (not supplied). Connect the video printer using the A/V connecting cable supplied with your camcorder. Connect the yellow plug of the cable to the video jack on both your camcorder and the video printer. Refer to the operating instructions of the video printer as well.



If the video printer is equipped with S video input
Use the S video connecting cable (not supplied). Connect it to the S VIDEO jack and the S video input of the video printer.

Advanced Recording Operations

Using the wide mode

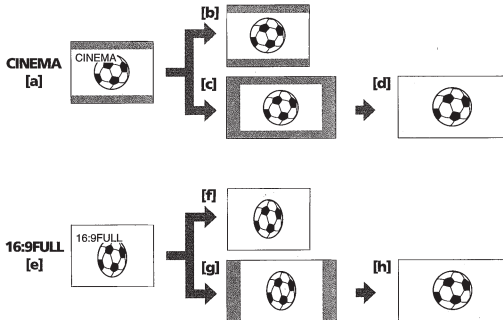
You can record a cinema-like picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9FULL). Refer to the operating instructions of your TV.

CINEMA

Black bands appear on the screen during recording in the CINEMA mode [a], playing back on a normal TV [b] or a wide-screen TV [c]. If you set the screen mode of the wide-screen TV to the zoom mode, a picture without black bands appears [d].

16:9FULL

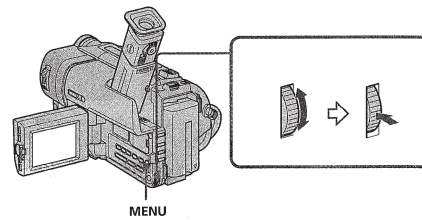
The picture during recording in the 16:9FULL mode [e], or playing back on a normal TV [f] or a wide-screen TV [g] is horizontally compressed. If you set the screen mode of the wide-screen TV to the full mode, you can watch pictures of normal images [h].



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Using the wide mode

In the standby mode, set 16:9WIDE to CINEMA or 16:9FULL in the menu settings (p. 55).



To cancel the wide mode

Set 16:9WIDE to OFF in the menu settings.

If the wide mode is set to 16:9FULL (CCD-TRV57/TRV67/TRV87 only)

The SteadyShot function does not work. If you select 16:9FULL in the menu settings when the SteadyShot function is working, flashes and the SteadyShot function does not function.

In the wide mode

You cannot select the old movie function with DIGITAL EFFECT (CCD-TRV87 only) and the bounce function with FADER.

Date or time indicator

When you record in the 16:9FULL mode, the date or time indicator will be widened on wide-screen TVs.

During recording

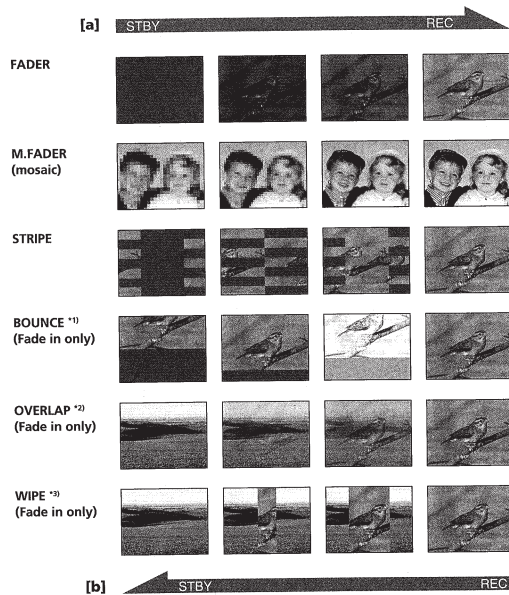
You cannot change or cancel the wide mode. When you cancel the wide mode, set your camcorder to the standby mode and then set 16:9WIDE to OFF.

Advanced Recording Operations

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Using the fader function

You can fade in or out to give your recording a professional appearance.



MONOTONE

When fading in, the picture gradually changes from black-and-white to color. When fading out the picture gradually changes from color to black-and-white.

*1 You can use this function only when D ZOOM is set to OFF.

*2 CCD-TRV87 only

*3 CCD-TRV87 only. The sound does not wipe away.

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Using the fader function

(1) When fading in [a]

In the standby mode, press FADER until the desired fader indicator flashes.

When fading out [b]

In the recording mode, press FADER until the desired fader indicator flashes.

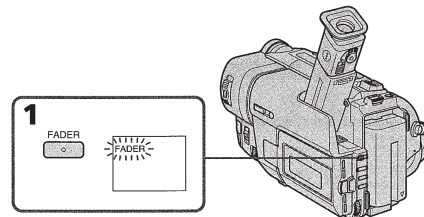
The indicator changes as follows:

FADER → M.FADER → STRIPE → BOUNCE → MONOTONE →

OVERLAP (CCD-TRV87 only) → WIPE (CCD-TRV87 only) → no indicator

The last selected fader mode is indicated first of all.

(2) Press START/STOP. The fader indicator stops flashing.



To cancel the fader function

After the fade in/out is carried out: Your camcorder automatically returns to the normal mode.

Before the fade in/out is carried out: Before pressing START/STOP, press FADER until the indicator disappears.

Advanced Recording Operations

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Using the Fader function

Note (CCD-TRV87 only)

You cannot use the following functions while using the fader function. Also, you cannot use the fader function while using the following functions.

- Digital effect
- Low lux mode of PROGRAM AE (Overlap/Wipe function only)
- Super NightShot
- Tape Photo recording

The date, time indicator and title do not fade in or fade out

Erase them before operating the fader function if they are not needed.

If you do not record anything before operating the wipe or overlap function (CCD-TRV87 only)

Your camcorder stores the image on the tape. As the image is being stored, the WIPE or OVERLAP indicator flashes quickly, and the picture you are shooting disappears from the viewfinder. Depending on the tape condition, the picture may not be recorded clearly.

While using the bounce function, you cannot use the following functions:

- Exposure
- Focus
- Zoom
- Picture effect

Note on the bounce function

The BOUNCE indicator does not appear in the following mode or functions:

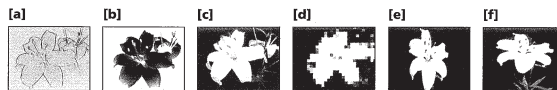
- D ZOOM is set to the mode other than OFF in the menu settings.
- Wide mode
- Picture effect
- PROGRAM AE

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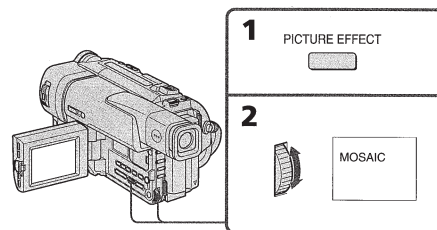
Using special effects – Picture effect

You can digitally process images to obtain special effects like those in films or on the TV.

- PASTEL [a]** : The contrast of the picture is emphasized, and the picture looks like an animated cartoon.
- NEG. ART [b]** : The color and brightness of the picture is reversed.
- SEPIA** : The picture is sepia.
- B&W** : The picture is monochrome (black-and-white).
- SOLARIZE [c]** : The light intensity is clearer, and the picture looks like an illustration.
- MOSAIC [d]** : The picture is mosaic.
- SLIM [e]** : The picture expands vertically.
- STRETCH [f]** : The picture expands horizontally.



- (1) Press PICTURE EFFECT in the standby or recording mode. The picture effect indicator appears.
- (2) Turn the SEL/PUSH EXEC dial to select the desired picture effect mode. The indicator changes as follows:
PASTEL ↔ NEG.ART ↔ SEPIA ↔ B&W ↔ SOLARIZE ↔ MOSAIC ↔ SLIM ↔ STRETCH



To turn the picture effect function off

Press PICTURE EFFECT.

While using the picture effect function (CCD-TRV87 only)

You cannot select the old movie mode with DIGITAL EFFECT.

When you turn the power off

Your camcorder automatically returns to the normal mode.

Advanced Recording Operations

Using special effects – Digital effect

- CCD-TRV87 only

You can add special effects to recorded pictures using the various digital functions. The sound is recorded normally.

STILL

You can record a still picture so that it is superimposed on a moving picture.

FLASH (FLASH MOTION)

You can record still pictures successively at constant intervals.

LUMI. (LUMINANCEKEY)

You can swap a brighter area in a still picture with a moving picture.

TRAIL

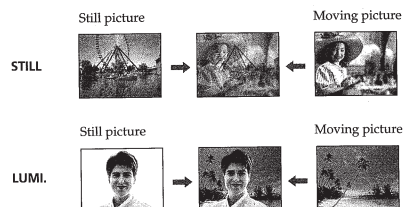
You can record the picture so that an incidental image like a trail is left.

SLOW SHTR (SLOW SHUTTER)

You can slow down the shutter speed. The slow shutter mode is good for recording dark pictures more brightly.

OLD MOVIE

You can add an old movie type atmosphere to pictures. Your camcorder automatically sets the wide mode to CINEMA, picture effect to SEPIA, and the appropriate shutter speed.

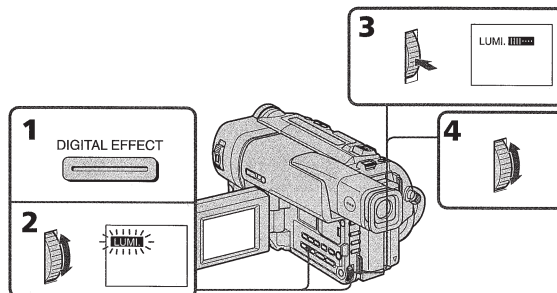


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Using special effects – Digital effect

- (1) While your camcorder is in the standby or recording mode, press DIGITAL EFFECT. The digital effect indicator appears.
- (2) Turn the SEL/PUSH EXEC dial to select the desired digital effect mode. The indicator changes as follows:
STILL ↔ FLASH ↔ LUMI. ↔ TRAIL ↔ SLOW SHTR ↔ OLD MOVIE
- (3) Press the SEL/PUSH EXEC dial. The indicator lights up and the bars appear. In the STILL and LUMI. modes, the still picture is stored in memory.
- (4) Turn the SEL/PUSH EXEC dial to adjust the effect as follows:
STILL – The rate of the still picture you want to superimpose on the moving picture
FLASH – The interval of flash motion
LUMI. – The color scheme of the area in the still picture which is to be swapped with a moving picture
TRAIL – The vanishing time of the incidental image
SLOW SHTR – Shutter speed. The larger the shutter speed number, the slower the shutter speed.
OLD MOVIE – No adjustment necessary

The more bars there are on screen, the stronger the digital effect. The bars appear in the following modes: STILL, FLASH, LUMI. and TRAIL.



To cancel the digital effect

Press DIGITAL EFFECT. The digital effect indicator disappears.

Advanced Recording Operations

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Using special effects – Digital Effect

Notes

- The following functions do not work during digital effect:
 - Fader
 - Low lux mode of PROGRAM AE
 - Tape Photo recording
 - Super NightShot
- The following function does not work in the slow shutter mode:
 - Exposure
 - PROGRAM AE
- The following functions do not work in the old movie mode:
 - Exposure
 - Wide mode
 - Picture effect
 - PROGRAM AE

When you turn the power off

The digital effect will be automatically canceled.

When recording in the slow shutter mode


Auto focus may not be effective. Focus manually using a tripod.

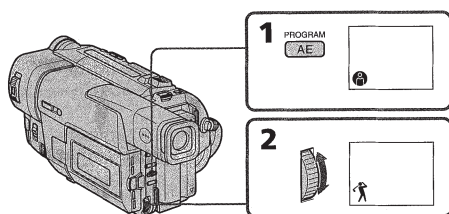
Shutter speed

Shutter speed number	Shutter speed
SLOW SHTR 1	1/30
SLOW SHTR 2	1/15
SLOW SHTR 3	1/8
SLOW SHTR 4	1/4

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Using the PROGRAM AE function

- Press PROGRAM AE in the standby mode. The PROGRAM AE indicator appears.
- Turn the SEL/PUSH EXEC dial to select the desired PROGRAM AE mode. The indicator changes as follows:
 (CCD-TRV87 only)



To turn the PROGRAM AE function off

Press PROGRAM AE.

Notes

- In the spotlight, sports lesson and beach & ski modes, you cannot take close-ups. This is because your camcorder is set to focus only on subjects in the middle to far distance.
- In the sunset & moon and landscape modes, your camcorder is set to focus only on distant subjects.
- The following functions do not work in the PROGRAM AE mode:
 - Slow shutter (CCD-TRV87 only)
 - Old movie (CCD-TRV87 only)
 - NightShot
 - Bounce
- The following functions do not work in the low lux mode (CCD-TRV87 only):
 - Digital effect
 - Overlap
 - Wipe
 - Exposure
- If you press PROGRAM AE when using the NightShot function, the PROGRAM AE indicator flashes and the PROGRAM AE function does not work.

If you are recording under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp

Flickering or changes in color may occur in the following modes. If this happens, turn the PROGRAM AE function off.

- Soft portrait mode
- Sports lesson mode

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Using the PROGRAM AE function

You can select PROGRAM AE (Auto Exposure) mode to suit your specific shooting requirements.

Spotlight mode

This mode prevents people's faces, for example, from appearing excessively white when shooting subjects lit by strong light in the theater.

Soft portrait mode

This mode brings out the subject while creating a soft background for subjects such as people or flowers.

Sports lesson mode

This mode minimizes shake on fast-moving subjects such as in tennis or golf.

Beach & ski mode

This mode prevents people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & moon mode

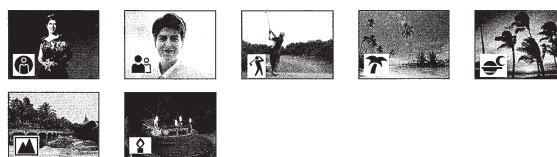
This mode allows you to maintain atmosphere when you are recording sunsets, general night views, fireworks displays and neon signs.

Landscape mode

This mode is for when you are recording distant subjects such as mountains and prevents your camcorder from focusing on glass or metal mesh in windows when you are recording a subject behind glass or a screen.

Low lux mode (CCD-TRV87 only)

This mode makes subjects brighter in insufficient light.



Advanced Recording Operations

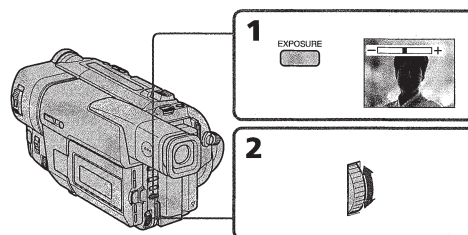
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Adjusting the exposure manually

You can manually adjust and set the exposure. Adjust the exposure manually in the following cases:

- The subject is backlit
- Bright subject and dark background
- To record dark pictures (e.g. night scenes) faithfully

- Press EXPOSURE in the standby or recording mode. The exposure indicator appears.
- Turn the SEL/PUSH EXEC dial to adjust the brightness.



To return to the automatic exposure mode

Press EXPOSURE again.

Note

When you adjust the exposure manually, the following function and modes do not work:

- Backlight
- Slow shutter (CCD-TRV87 only)
- Old movie (CCD-TRV87 only)

Your camcorder automatically returns to the automatic exposure mode:

- if you change the PROGRAM AE mode
- if you slide NIGHTSHOT to ON

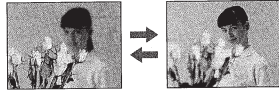
Advanced Recording Operations

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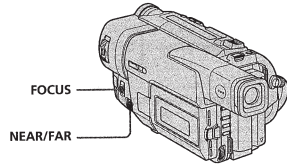
Focusing manually

You can gain better results by manually adjusting the focus in the following cases:

- The autofocus mode is not effective when shooting
 - subjects through glass coated with water droplets
 - horizontal stripes
 - subjects with little contrast with backgrounds such as walls and sky
- When you want to change the focus from a subject in the foreground to a subject in the background
- Shooting a stationary subject when using a tripod



- (1) Set FOCUS to MANUAL in the standby or recording mode. The indicator appears.
- (2) Turn NEAR/FAR to sharpen focus.



To return to the autofocus mode
Set FOCUS to AUTO.

To record distant subjects

When you press FOCUS down to INFINITY, the lens focuses on infinity and indicator appears. When you release FOCUS, your camcorder returns to the manual focus mode. Use this mode when your camcorder focuses on near objects even though you are trying to shoot a distant object.

To focus precisely

Adjust the zoom by first focusing at the "T" (telephoto) position and then shooting at the "W" (wide-angle) position. This makes focusing easier.

When you shoot close to the subject

Focus at the end of the "W" (wide-angle) position.

changes to the following indicators:

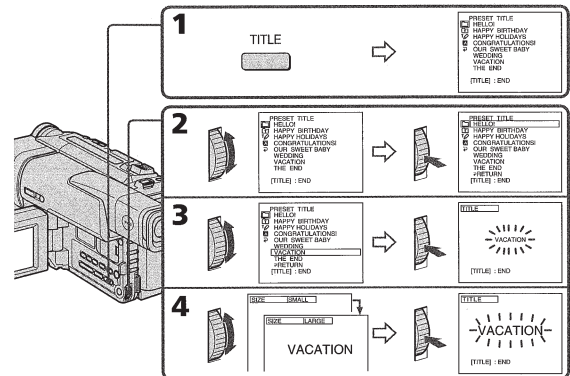
- when recording a distant subject.
- when the subject is too close to focus on.

Superimposing a title

You can select one of eight preset titles and two custom titles (p. 47). You can also select the language, color, size and position of titles.



- (1) Press TITLE in the standby mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select the desired title, then press the dial. The titles are displayed in the language you selected.
- (4) Change the color, size, or position, if necessary.
 - ① Turn the SEL/PUSH EXEC dial to select the color, size, or position, then press the dial. The item appears.
 - ② Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial.
 - ③ Repeat steps ① and ② until the title is laid out as desired.
- (5) Press the SEL/PUSH EXEC dial again to complete the setting.
- (6) Press START/STOP to start recording.
- (7) When you want to stop recording the title, press TITLE.



To superimpose the title while you are recording

Press TITLE while you are recording, and carry out steps 2 to 5. When you press the SEL/PUSH EXEC dial at step 5, the title is superimposed.

To select the language of a preset title

If you want to change the language, select before step 2. Then select the desired language and return to step 2.

Superimposing a title

Note

Both the date and time or either of them may not be displayed depending on the size or position of the title.

If you display the menu or title menu while superimposing a title

The title is not recorded while the menu or title menu is displayed.

To use the custom title

If you want to use the custom title, select in step 2. If you have not made any custom title, "-----" appears on the display.

Title setting

- The title color changes as follows:
WHITE ↔ YELLOW ↔ VIOLET ↔ RED ↔ CYAN ↔ GREEN ↔ BLUE
- The title size changes as follows:
SMALL ↔ LARGE

You cannot input more than 13 characters in LARGE size.

• The title position changes as follows:
1 ↔ 2 ↔ 3 ↔ 4 ↔ 5 ↔ 6 ↔ 7 ↔ 8 ↔ 9

The larger the position number, the lower the title is positioned.

When you select the title size "LARGE", you cannot choose position 9.

When you select the title size "LARGE" in the CINEMA mode, you cannot choose position 8 nor 9.

When you are selecting and setting the title

You cannot superimpose the title displayed on the screen.

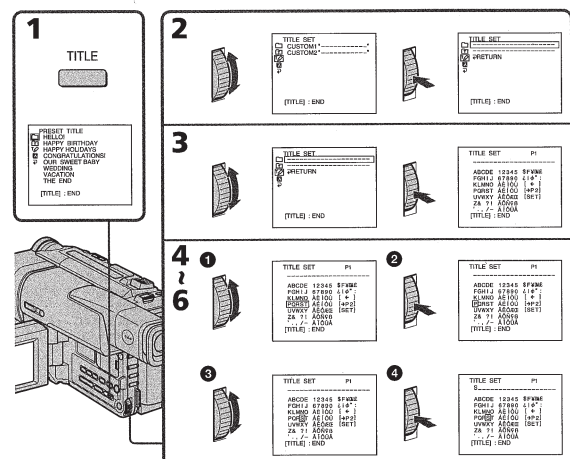
When you superimpose a title while you are recording

The beep does not sound.

Making your own titles

You can make up to two titles and store them in your camcorder. Each title can have up to 20 characters.

- (1) Press TITLE in the standby or VTR (CCD-TRV87)/PLAYER (CCD-TRV37/TRV57/TRV67) mode.
- (2) Turn the SEL/PUSH EXEC dial to select , then press the dial.
- (3) Turn the SEL/PUSH EXEC dial to select the first line (CUSTOM1) or second line (CUSTOM2), then press the dial.
- (4) Turn the SEL/PUSH EXEC dial to select the column of the desired character, then press the dial.
- (5) Turn the SEL/PUSH EXEC dial to select the desired character, then press the dial.
- (6) Repeat steps 4 and 5 until you have selected all characters and completed the title.
- (7) To finish making your own titles, turn the SEL/PUSH EXEC dial to select [SET], then press the dial. The title is stored in memory.
- (8) Press TITLE to make the title menu disappear.



Making your own titles

To change a title you have stored

In step 3, select CUSTOM1 or CUSTOM2, depending on which title you want to change, then press the SEL./PUSH EXEC dial. Turn the SEL./PUSH EXEC dial to select [←], then press the dial to delete the title. The last character is erased. Enter the new title as desired.

If you take 5 minutes or longer to enter characters in the standby mode while a cassette is in your camcorder

The power automatically goes off. The characters you have entered remain stored in memory. Turn STANDBY down once and then up again, then proceed from step 1. We recommend setting the POWER switch to VTR (CCD-TRV87) or PLAYER (CCD-TRV37/TRV57/TRV67) or removing the cassette so that your camcorder does not automatically turn off while you are entering title characters.

If you select [→P2]

The menu for selecting alphabet and Russian characters appear. Select [→P1] to return to the previous screen.

To delete the title

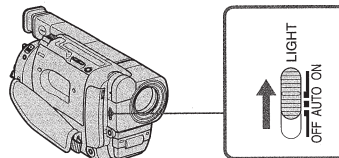
Select [←]. The last character is erased.

Using the built-in light

You can use the built-in light to suit your shooting situation. The recommended distance between the subject and camcorder is about 5 feet (1.5 m).

Slide LIGHT to ON while your camcorder is in the standby mode. The built-in light turns on.

The built-in light turns on/off by turning STANDBY to STANDBY/LOCK.



To turn off the built-in light

Slide LIGHT to OFF.

To turn on the built-in light automatically

Slide LIGHT to AUTO.

The built-in light automatically turns on and off according to the ambient brightness. However, the built-in light automatically turns off if the built-in light turns on for more than about 5 minutes. In this case, turn STANDBY down once and up again.

CAUTION

Be careful not to touch the lighting section, because the plastic window and surrounding surfaces are hot while the light is on. It remains hot for a while after the light is turned off.

DANGER

Not to be handled by children.

Emits intense heat and light.

Use with caution to reduce the risk of fire or injury to persons.

Do not direct light at persons or materials from less than 4 feet (1.22 m) during use and until cool.

Slide LIGHT to OFF when not in use.

Notes

- The battery pack is quickly discharging while the built-in light is turned on. Slide LIGHT to OFF when not in use.
- When you do not use your camcorder, slide LIGHT to OFF and remove the battery pack to avoid turning on the built-in light.
- When flickering occurs while shooting in the auto mode, slide LIGHT to ON.
- The built-in light may turn on/off when you use the PROGRAM AE or backlight function while shooting in the auto mode.
- The built-in light may be turned off when inserting or ejecting a cassette.
- While the end search function is working, the built-in light is turned off.

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Advanced Recording Operations

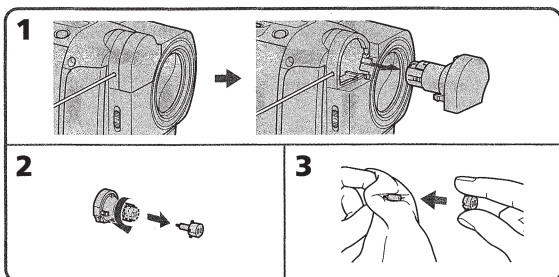
Using the built-in light

Replacing the bulb

Use the Sony XB-3D halogen lamp (not supplied). The supplied halogen lamp is not on the market. Purchase the Sony XB-3D halogen lamp.

Remove the power source before replacing the bulb.

- (1) Remove the built-in light unit while pushing the hole under the built-in light unit using a wire.
- (2) Turn the bulb housing counterclockwise and detach from the built-in light unit.
- (3) Replace the bulb using a dry cloth.
- (4) Attach the bulb housing turning it clockwise, then replace the built-in light unit.



CAUTION

- When replacing the bulb, use only the Sony XB-3D halogen lamp (not supplied) to reduce the risk of fire.
- To prevent possible burn hazard, disconnect the power source before replacing and do not touch the bulb until the bulb becomes cool enough to handle (for about 30 minutes or more).

Note

To prevent the bulb from being smudged with finger prints, handle it with a dry cloth, etc. If the bulb is smudged, wipe it completely.

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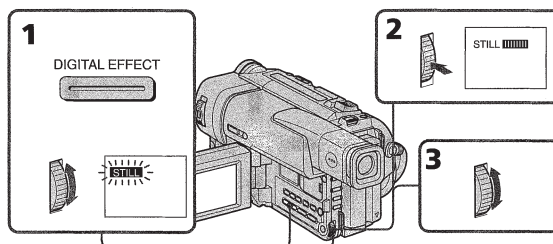
— Advanced Playback Operations —

Playing back a tape with digital effects

— CCD-TRV87 only

During playback, you can process a scene using the digital effect functions: STILL, FLASH, LUMI and TRAIL.

- (1) During playback, press DIGITAL EFFECT and turn the SEL./PUSH EXEC dial until the desired digital effect indicator (STILL, FLASH, LUMI or TRAIL) flashes.
- (2) Press the SEL./PUSH EXEC dial.
The digital effect indicator lights up and the bars appear. In the STILL or LUMI mode, the picture where you press the SEL./PUSH EXEC dial is stored in memory as a still picture.
- (3) Turn the SEL./PUSH EXEC dial to adjust the effect.
For details of each digital effect function, see page 38.



To cancel the digital effect function

Press DIGITAL EFFECT.

Notes

- You cannot process externally input scenes using the digital effect function.
- To record pictures that you have processed using the digital effect function, record the pictures on the VCR.

STILL and LUMI modes

- You can search a picture to image-process by pressing ►► or ◀◀ in the playback mode. However, noise appears on the picture.
- You cannot delete a picture stored in memory even if you stop playing back a tape.

When you set the POWER switch to OFF (CHARGE)

The digital effect function is automatically canceled.

Advanced Playback Operations

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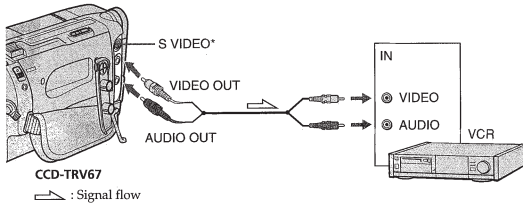
Dubbing a tape

Using the A/V connecting cable or S video connecting cable (not supplied)

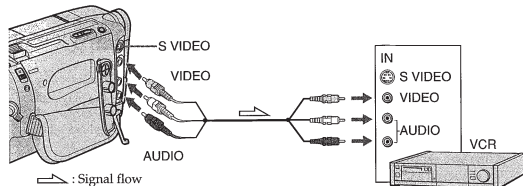
Connect your camcorder to the VCR using the A/V connecting cable supplied with your camcorder.

- (1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
- (2) Set the input selector on the VCR to LINE.
Refer to the operating instructions of your VCR for more information.
- (3) Set the POWER switch to VTR (CCD-TRV87) or PLAYER (CCD-TRV37/ TRV57/TRV67).
- (4) Play back the recorded tape on your camcorder.
- (5) Start recording on the VCR.
Refer to the operating instructions of your VCR for more information.

CCD-TRV37/TRV57/TRV67



CCD-TRV87



When you have finished dubbing a tape

Press **■** on both your camcorder and the VCR.

To prevent deterioration of pictures from dubbing

Set EDIT to ON in the menu settings before dubbing.

Dubbing a tape

If you have displayed the screen indicators on the TV
Make the indicators disappear by pressing DISPLAY so that they will not be superimposed on the edited tape.

You can edit on VCRs that support the following systems

8 mm, Hi8, Hi8 Digital, VHS, VHS, S-VHS, S-VHS, Hi8 VHS, S-VHS, S-VHS, ED Betamax, ED Betamax, mini DV or DV

If your VCR is a monaural type (CCD-TRV87 only)

Connect the yellow plug for video and the white plug for audio on both your camcorder and the VCR. You do not connect the red plug. With this connection, the sound will be monaural.

Connect using an S video cable (not supplied) to obtain high-quality pictures (CCD-TRV67/TRV87 only)

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.

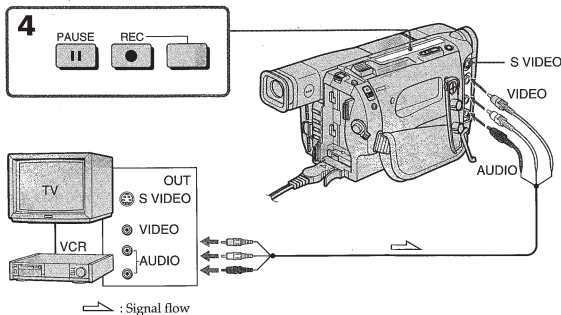
Connect an S video cable (not supplied) to the S video jacks of both your camcorder and the VCR.

Recording video or TV programs

— CCD-TRV87 only

You can record a tape from another VCR or a TV program from a TV that has video/ audio outputs. Use your camcorder as a recorder. Turn down the volume of your camcorder while editing. Otherwise, the picture may be distorted.

- (1) Insert a blank tape (or a tape you want to record over) into your camcorder. If you are recording a tape from the VCR, insert a recorded tape into the VCR.
- (2) Set the POWER switch to VTR.
- (3) Set DISPLAY to LCD in the menu settings (p. 55). The picture from a TV or VCR appears in the viewfinder or on the LCD screen.
- (4) Press **●** REC and the button on its right simultaneously on your camcorder, then immediately press **■** on your camcorder.
- (5) Press **▶** on the VCR to start playback if you are recording a tape from VCR. Select a TV program if you are recording from TV.
- (6) Press **■** on your camcorder at the scene where you want to start recording from.



Note

You cannot record dual sound broadcasts.

If your VCR is a monaural type

Connect the yellow plug for video and the white plug for audio on both your camcorder and the VCR (you do not connect the red plug). With this connection, the sound will be monaural.

Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.

Connect an S video cable (not supplied) to the S video jacks of both your camcorder and VCR.

If your VCR or TV does not have an S VIDEO OUT jack

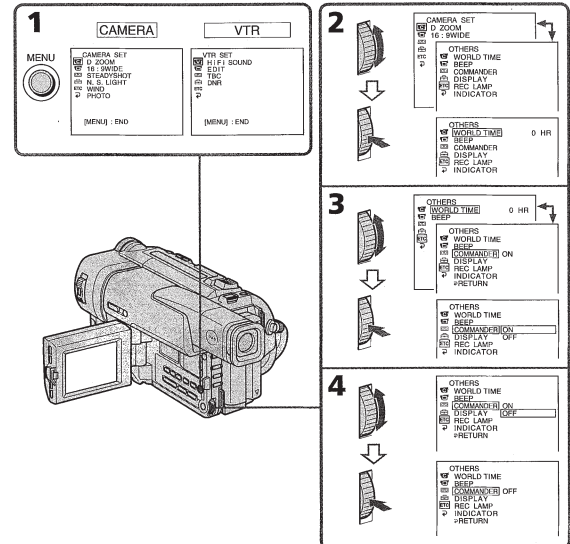
Do not connect an S video cable (not supplied) to your camcorder. If you connect an S video cable, the picture may not appear on screen.

— Customizing Your Camcorder —

Changing the menu settings

To change the mode settings in the menu settings, select the menu items with the SEL/PUSH EXEC dial. The default settings can be partially changed. First, select the icon, then the menu item and then the mode.

- (1) In the standby or VTR (CCD-TRV87)/PLAYER (CCD-TRV37/TRV57/TRV67) mode, press MENU.
- (2) Turn the SEL/PUSH EXEC dial to select the desired icon, then press the dial to set.
- (3) Turn the SEL/PUSH EXEC dial to select the desired item, then press the dial to set.
- (4) Turn the SEL/PUSH EXEC dial to select the desired mode, and press the dial to set.
- (5) If you want to change other items, select **↶** RETURN and press the dial, then repeat steps from 2 to 4.
For details, see "Selecting the mode setting of each item" (p. 56).



To make the menu display disappear

Press MENU.

Changing the menu settings

Menu items are displayed as the following icons:

- CAMERA SET
- VTR SET (CCD-TRV87 only)
- PLAYER SET (CCD-TRV37/TRV57/TRV67 only)
- LCD SET
- TAPE SET
- SETUP MENU
- OTHERS

Depending on your camcorder model

The menu display may be different from that in this illustration.

Selecting the mode setting of each item ● is the default setting.

Menu items differ according to whether the POWER switch is set to VTR (CCD-TRV87)/PLAYER (CCD-TRV37/TRV57/TRV67) or CAMERA.

The LCD screen shows only the items you can operate at the moment.

Icon/item	Mode	Meaning	POWER switch
D ZOOM	● OFF	If you set to OFF, digital zoom is deactivated and up to 20x is carried out.	CAMERA
	40x	If you set to 40x/200x, digital zoom is activated and more than 20x to 40x/200x is performed digitally. (p. 18) (CCD-TRV37 only)	
	200x		
	● OFF	If you set to OFF, digital zoom is deactivated and up to 20x is carried out.	
40x	If you set to 40x/360x, digital zoom is activated and more than 20x to 40x/360x is performed digitally. (p. 18) (CCD-TRV57/TRV67/TRV87 only)		
360x			
16:9WIDE	● OFF	—	CAMERA
	CINEMA	To record in the CINEMA mode (p. 32)	
	16:9FULL	To record in the 16:9FULL mode	
STEADYSHOT (CCD-TRV57/TRV67/TRV87 only)	● ON	To compensate for camera-shake	CAMERA
	OFF	To cancel the SteadyShot function. Natural pictures are produced when shooting a stationary object with a tripod.	
N.S.LIGHT	● ON	To use the NightShot Light function (p. 21)	CAMERA
	OFF	To cancel the NightShot Light function	
WIND (CCD-TRV87 only)	● OFF	—	CAMERA
	ON	To reduce wind noise when recording in strong wind	
PHOTO (CCD-TRV87 only)	● NORMAL	To activate the normal photo function	CAMERA
	FADE	To activate the fade photo function	
	SHUTTER	To activate the shutter photo function	

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Changing the menu settings

Icon/item	Mode	Meaning	POWER switch
REC MODE	● SP	To record in SP (Standard Play) mode	VTR CAMERA
	LP	To increase the recording time to twice the SP mode	
ORC TO SET		To automatically adjust the recording condition to get the best possible recording. Press START/STOP to start adjustment. Your camcorder takes about 10 seconds to check the tape condition and then returns to the standby mode.	CAMERA
ORC stands for "Optimizing the Recording Condition".			
REMAIN	● AUTO	To display the remaining tape bar: <ul style="list-style-type: none"> • for about 8 seconds after your camcorder is turned on and calculates the remaining amount of tape • for about 8 seconds after a cassette is inserted and your camcorder calculates the remaining amount of tape • for about 8 seconds after is pressed in VTR (CCD-TRV87) or PLAYER (CCD-TRV37/TRV57/TRV67) mode • for about 8 seconds after DISPLAY is pressed to display the screen indicators • for the period of tape rewinding, forwarding or picture search in the VTR (CCD-TRV87) or PLAYER (CCD-TRV37/TRV57/TRV67) mode 	VTR/PLAYER CAMERA
	ON	To always display the remaining tape bar	

Notes on the LP mode

- When you record a tape in the LP mode on your camcorder, we recommend playing the tape on your camcorder. When you play back the tape on other camcorders or VCRs, noise may occur in pictures or sound.
- Noise may occur also when you play on your camcorder tapes recorded in the LP mode on other camcorders or VCRs.
- When you record a tape in the LP mode on your camcorder, recording is carried out in the standard 8 mm system. (CCD-TRV67/TRV87 only)

Notes on ORC setting

- Each time you eject the cassette, the ORC setting will be canceled. If necessary, reset the setting.
- You cannot use this setting on a tape with the red mark on the cassette exposed. (i. e. the tape is write-protected)
- When you set ORC TO SET, a non-recorded section of about 0.1 seconds appears on the tape. However, note that this non-recorded section disappears from the tape when you continue recording from this section.
- To check if you have already set the ORC setting, select ORC TO SET in the menu settings. "ORC ON" is displayed if ORC TO SET is already set.

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Changing the menu settings

Icon/item	Mode	Meaning	POWER switch
HiFi SOUND (CCD-TRV87 only)	● STEREO	To play back a stereo tape or dual sound track tape	VTR
	1	To play back a monaural tape or dual sound track tape with main sound	
	2	To play back a dual sound track tape with sub sound	
EDIT	● OFF	—	VTR/PLAYER
	ON	To minimize picture deterioration when editing	
TBC	● ON	To correct jitter	VTR/PLAYER
	OFF	To not correct jitter. Set TBC to OFF when playing back a tape on which you have dubbed over and recorded the signal of a TV game or similar machine.	
TBC stands for "Time Base Corrector".			
DNR	● ON	To reduce picture noise	VTR/PLAYER
	OFF	To reduce a conspicuous afterimage when the picture has a lot of movement	
DNR stands for "Digital Noise Reduction".			
LCD B. L.	● BRT NORMAL	To set the brightness on the LCD screen normal	VTR/PLAYER CAMERA
	BRIGHT	To brighten the LCD screen	
LCD COLOR		To adjust the color on the LCD screen	VTR/PLAYER CAMERA

Notes on the SteadyShot function (CCD-TRV57/TRV67/TRV87 only)

- The SteadyShot function will not correct excessive camera-shake.
- Attachment of a conversion lens (not supplied) may influence the SteadyShot function.
- SteadyShot does not operate in the 16:9FULL mode. If you set STEADYSHOT to ON in the menu settings, the indicator flashes.

If you cancel the SteadyShot function (CCD-TRV57/TRV67/TRV87 only)

The SteadyShot off indicator appears. Your camcorder prevents excessive compensation for camera-shake.

In more than 5 minutes after removing the power source

The "WIND" (CCD-TRV87 only) "COMMANDER" (CCD-TRV57/TRV67/TRV87 only), "EDIT" and "HiFi SOUND" (CCD-TRV87 only) items are returned to their default settings. The other menu items are held in memory even when the battery is removed, as long as the lithium battery is installed.

Note on LCD B.L.

When you use power sources other than the battery pack, "BRIGHT" is automatically selected.

Customizing Your Camcorder

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Changing the menu settings

Icon/item	Mode	Meaning	POWER switch
CLOCK SET		To reset the date or time (p. 61)	CAMERA
	● ON	To record the date for 10 seconds after recording has started	
AUTO DATE	OFF	To cancel the auto date function	CAMERA
AUTO TV ON (CCD-TRV87 only)	● OFF	—	VTR CAMERA
	ON	To automatically turn on the Sony TV when using the super laser link function (p. 29)	
TV INPUT (CCD-TRV87 only)	● VIDEO1	To switch the video input on a Sony TV when using the super laser link function (p. 29)	VTR CAMERA
	VIDEO2		
	VIDEO3		
LTR SIZE	● NORMAL	To display selected menu items in normal size	VTR/PLAYER CAMERA
	2x	To display selected menu items at twice the normal size	
DEMO MODE	● ON	To make the demonstration appear	CAMERA
	OFF	To cancel the demonstration mode	

Notes on DEMO MODE

- You cannot select DEMO MODE when a cassette is inserted in your camcorder.
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you have set the POWER switch to CAMERA without a cassette inserted.
- To cancel the demonstration, insert a cassette, set the POWER switch to other than CAMERA, or set DEMO MODE to OFF.
- When NIGHTSHOT is set to ON, the NIGHTSHOT indicator appears in the viewfinder or on the LCD screen and you cannot select DEMO MODE in the menu settings.

Customizing Your Camcorder

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Changing the menu settings

Icon/Item	Mode	Meaning	POWER switch
WORLD TIME		To set the clock to the local time. Turn the SEL/PUSH EXEC dial to set a time difference. The clock changes by the time difference you set here. If you set the time difference to 0, the clock returns to the originally set time.	CAMERA
BEEP	● MELODY	To output the melody when you start/stop recording or when an unusual condition occurs on your camcorder	VTR/PLAYER CAMERA
	NORMAL	To output the beep sound instead of the melody	
	OFF	To cancel the melody and beep sound	
COMMANDER (CCD-TRV57/ TRV67/TRV87 only)	● ON	To activate the Remote Commander supplied with your camcorder	VTR/PLAYER CAMERA
	OFF	To deactivate the Remote Commander to avoid remote control misoperation caused by other VCR's remote control	
DISPLAY	● LCD	To show the display on the LCD screen and viewfinder	VTR/PLAYER CAMERA
	V-OUT/LCD	To show the display on the TV screen, LCD screen and viewfinder	
REC LAMP	● ON	To light up the camera recording lamp at the front of your camcorder	CAMERA
	OFF	To turn the camera recording lamp off so that the subject is not aware of the recording	
INDICATOR (CCD-TRV87 only)	● BL OFF	To turn off the backlight on display window	VTR CAMERA
	BL ON	To turn on the backlight	

Note (CCD-TRV87 only)

If you press DISPLAY with "DISPLAY" set to "V-OUT/LCD" in the menu settings, the picture from a TV or VCR will not appear on the LCD screen even when your camcorder is connected to outputs on the TV or VCR.

Notes on INDICATOR (CCD-TRV87 only)

- When you select "BL ON", battery life is reduced by about 10 percent during recording.
- When you use power sources other than the battery pack, "BL ON" is automatically selected.

Resetting the date and time

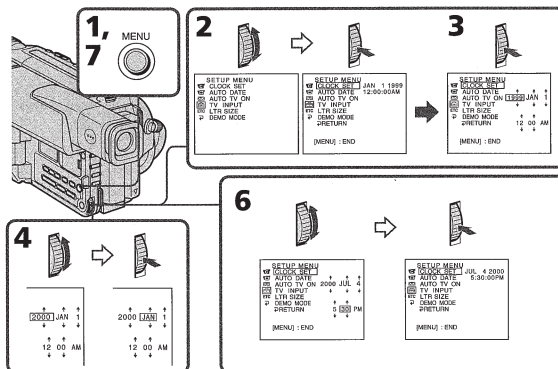
The default clock setting is set to East Coast Standard Time.

The date and time are held in memory by the lithium battery. If you replace the lithium battery with the battery pack or other power source connected, you need not reset the date and time.

You must reset the date and time when the lithium battery becomes dead with no power source installed.

First, set the year, then the month, the day, the hour and then the minute.

- While your camcorder is in the standby mode, press MENU to display the menu.
- Turn the SEL/PUSH EXEC dial to select , then press the dial.
- Turn the SEL/PUSH EXEC dial to select CLOCK SET, then press the dial.
- Turn the SEL/PUSH EXEC dial to adjust the desired year, then press the dial.
- Set the month, day and hour by turning the SEL/PUSH EXEC dial and pressing the dial.
- Set the minute by turning the SEL/PUSH EXEC dial and pressing the dial by the time signal. The clock starts to move.
- Press MENU to make the menu disappear. The time indicator appears.



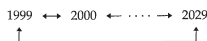
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Resetting the date and time

To check the preset date and time

Press DATE to display the date indicator.
Press TIME to display the time indicator.
Press DATE (or TIME) and then press TIME (or DATE) to simultaneously display the date and time indicator.
Press DATE and/or TIME again. The date and/or time indicator disappears.

The year changes as follows:



Auto date function

When you use your camcorder for the first time, turn it on and reset the date and time to your time before you start recording (p. 61). The date is automatically recorded for 10 seconds after you start recording (Auto date function). This function works only once a day.

Note on the time indicator

The internal clock of your camcorder operates on a 12-hour cycle.

- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

Note on the auto date function

You can change the AUTO DATE setting by selecting ON or OFF in the menu settings. The auto date function automatically displays the date once a day. However, the date may automatically appear more than once a day if:

- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE: to OFF once and set it back ON in the menu settings.

Additional Information

Usable cassettes and playback modes

Selecting the cassette type

– CCD-TRV67/TRV87 only

You can use both Hi8 and standard 8 mm video cassettes on your camcorder. When you use a Hi8 video cassette, recording and playback are carried out in the Hi8 system.

When you use a standard 8 mm video cassette, recording and playback are carried out in the standard 8 mm system.

However, if you record on a Hi8 video cassette in the LP mode, recording is carried out in the standard 8 mm system.

If you play back a tape recorded on a different video recorder on your camcorder, the playback mode is automatically selected according to the format in which the tape has been recorded.

This Hi8 system is an extension of the standard 8 mm system, and was developed to produce higher quality pictures.

You cannot playback a tape recorded in the Hi8 system correctly on video recorder/players other than a Hi8 video recorder/player.

What is Video 8 XR/video Hi8 XR?

– CCD-TRV37/TRV57/TRV87 only

"Video 8 XR"/"video Hi8 XR" is a function that further enhances the image quality of Video 8/video Hi8. This function allows you to record and playback pictures with clearer details.

Video tapes recorded on a camcorder having the "XR" function show excellent picture quality when they are played back on an "XR" camcorder.

The playback quality will be the normal quality of the standard 8mm/Hi8 camcorder when video tapes recorded on an "XR" camcorder are played back by a conventional standard 8mm/Hi8 camcorder or when video tapes recorded on a conventional standard 8mm/Hi8 camcorder are played back on the "XR" camcorder.

* "XR" stands for "Extended Resolution."

When you play back

The playback mode (SP/LP) and system, Hi8 or standard 8 mm (CCD-TRV67/TRV87 only) are automatically selected according to the format in which the tape has been recorded. The quality of the recorded picture in the LP mode, however, will not be as good as the SP mode.

Note on AFM HiFi stereo

– CCD-TRV87 only

When you play back a tape, the sound will be monaural if:

- You record the tape on your camcorder, then play it back on an AFM HiFi monaural video recorder/player.
- You record the tape on an AFM HiFi monaural video recorder, then play it back on your camcorder.

Foreign 8 mm video

Because TV color systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to "Using your camcorder abroad" to check the TV color systems used in foreign countries.

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Usable cassettes and playback modes

Copyright signal

When you record

– CCD-TRV87 only

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software. "COPY INHIBIT" appears on the LCD screen, in the viewfinder or on the TV screen if you try to record such software. Your camcorder does not record copyright control signals on the tape when it records.

When you play back a dual sound track tape

– CCD-TRV87 only

When you play back a dual sound track tape recorded in an AFM HiFi stereo system, set "HiFi SOUND" to the desired mode in the menu settings (p. 55).

Sound from speaker

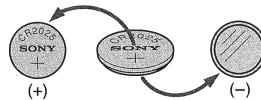
HiFi Sound Mode	Playing back a stereo tape	Playing back a dual sound track tape
STEREO	Stereo	Main sound and sub sound
1	Monaural	Main sound
2	Unnatural sound	Sub sound

You cannot record dual sound programs on your camcorder.

Changing the lithium battery in your camcorder

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu settings hold in memory by the lithium battery.

Insert the battery with the positive (+) side facing out. When the battery becomes weak or dead, the S indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.** Discard used batteries according to the manufacturer's instructions.



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, nor dispose of it in fire.

Lithium battery

- Keep the lithium battery out of the reach of children.
- Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to ensure good contact.

Lithium battery installed at the factory

This battery may not last 1 year.

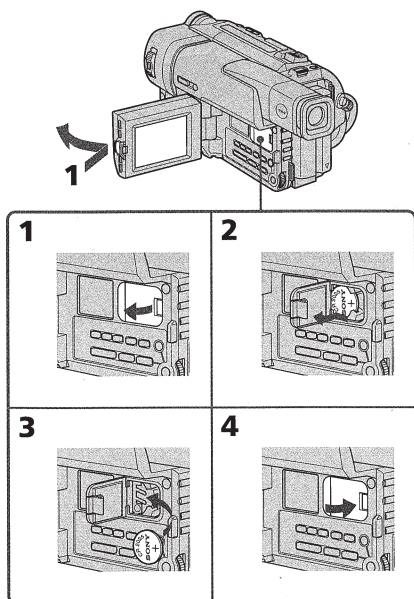
Additional Information

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Changing the lithium battery in your camcorder

Changing the lithium battery

- (1) Open the LCD panel and open the lid of the lithium battery compartment.
- (2) Push the lithium battery down once and pull it out from the holder.
- (3) Install a Sony CR2025 or Duracell DL-2025 lithium battery with the positive (+) side facing out.
- (4) Close the lid.



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Troubleshooting

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer or local authorized Sony service facility. If "C:□□:□□" appears on the LCD screen or in the viewfinder, the self-diagnosis display function has worked. See page 70.

In the recording mode

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	<ul style="list-style-type: none"> • The POWER switch is set to OFF (CHARGE) or VTR (CCD-TRV87)/PLAYER (CCD-TRV37/TRV57/TRV67). → Set it to CAMERA. (p. 16) • STANDBY is set to LOCK. → Turn STANDBY to STANDBY. (p. 16) • The tape has run out. → Rewind the tape or insert a new one. (p. 15, 24) • The write-protect tab is set to expose the red mark. → Use a new tape or slide the tab. (p. 15) • The tape is stuck to the drum (moisture condensation). → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 73)
The power goes off.	<ul style="list-style-type: none"> • While being operated in the CAMERA mode, your camcorder has been in the standby mode for more than 5 minutes. → Turn STANDBY down once and then up again. (p. 16)
The image on the viewfinder screen is not clear.	<ul style="list-style-type: none"> • The viewfinder lens is not adjusted. → Adjust the viewfinder lens. (p. 19)
The SteadyShot function does not work. (CCD-TRV57/TRV67/TRV87 only)	<ul style="list-style-type: none"> • STEADYSHOT is set to OFF in the menu settings. → Set it to ON. (p. 55) • The SteadyShot function does not work when the wide mode is set to 16:9FULL.
The autofocusing function does not work.	<ul style="list-style-type: none"> • FOCUS is set to MANUAL. → Set it to AUTO. (p. 44) • Shooting conditions are not suitable for autofocus. → Set FOCUS to MANUAL to focus manually. (p. 44)
The fader function does not work. (CCD-TRV87 only)	<ul style="list-style-type: none"> • The digital effect function is working. → Cancel it. (p. 38)
The S indicator flashes in the viewfinder.	<ul style="list-style-type: none"> • The video heads may be dirty. → Clean the heads using the Sony V8-25CLD cleaning cassette (not supplied). (p. 74)
The picture does not appear in the viewfinder.	<ul style="list-style-type: none"> • The LCD panel is open. → Close the LCD panel. (p. 17)
A vertical band appears when you shoot a subject such as lights or a candle flame against a dark background.	<ul style="list-style-type: none"> • The contrast between the subject and background is too high. This is not a malfunction.
A vertical band appears when you shoot a very bright subject.	<ul style="list-style-type: none"> • This is not a malfunction.

Additional Information

(Continued on the following page)

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Troubleshooting

Symptom	Cause and/or Corrective Actions
Some tiny white spots appear in the viewfinder or on the LCD screen. (CCD-TRV87 only)	<ul style="list-style-type: none"> Slow shutter, low lux or Super NightShot mode is activated. This is not a malfunction.
An unknown picture is displayed in the viewfinder or on the LCD screen.	<ul style="list-style-type: none"> If 10 minutes elapse after you set the POWER switch to CAMERA or DEMO MODE is set to ON in the menu settings without a cassette inserted, your camcorder automatically starts the demonstration. Insert a cassette and the demonstration stops. You can also cancel DEMO MODE. (p. 59)
The picture is recorded in incorrect or unnatural colors.	<ul style="list-style-type: none"> NIGHTSHOT is set to ON. Set it to OFF. (p. 21)
Picture appears too bright, and the subject does not appear in the viewfinder or on the LCD screen.	<ul style="list-style-type: none"> NIGHTSHOT is set to ON in a bright place. Set it to OFF, or use the NightShot function in a dark place. (p. 21)

In the playback mode

Symptom	Cause and/or Corrective Actions
The tape does not move when a video control button is pressed.	<ul style="list-style-type: none"> The POWER switch is set to CAMERA or OFF (CHARGE). Set it to VTR (CCD-TRV87)/PLAYER (CCD-TRV37/TRV57/TRV67). (p. 24) The tape has run out. Rewind the tape. (p. 24)
The playback picture is not clear or does not appear.	<ul style="list-style-type: none"> The television's video channel is not adjusted correctly. Adjust it. (p. 27) EDIT is set to ON in the menu settings. Set it to OFF. (p. 55) The video head may be dirty. Clean the heads using the Sony V8-25CLD cleaning cassette (not supplied). (p. 74)
No sound or only a low sound is heard when playing back a tape.	<ul style="list-style-type: none"> The stereo tape is played back with HiFi SOUND set to 2 in the menu settings (CCD-TRV87 only). Set it to STEREO. (p. 55) The volume is turned to minimum. Turn up the volume. (p. 24)
The sound is muted or images do not appear when monitoring the picture from TV on the LCD screen. (CCD-TRV87 only)	<ul style="list-style-type: none"> Pull out A/V connecting cable from AUDIO/VIDEO jack, then connect it again.

In the recording and playback modes

Symptom	Cause and/or Corrective Actions
The power does not turn on.	<ul style="list-style-type: none"> The battery pack is not installed, or is dead or nearly dead. Install a charged battery pack. (p. 9, 10) The AC power adaptor is not connected to a wall outlet. Connect the AC power adaptor to a wall outlet. (p. 4, 14)
The end search function does not work.	<ul style="list-style-type: none"> The tape was ejected after recording. You have not recorded on the new cassette yet.

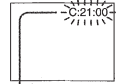
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Self-diagnosis display

Your camcorder has a self-diagnosis display function.

This function displays the current condition of your camcorder as a 5-digit code (a combination of a letter and figures) in the viewfinder, on the LCD screen or in the display window. If a 5-digit code is displayed, check the following code chart. The last two digits (indicated by □) will differ depending on the state of your camcorder.

Viewfinder (or LCD screen)



Self-diagnosis display

- C:□:□□ You can service your camcorder yourself.
- E:□:□□ Contact your Sony dealer or local authorized Sony facility.

Five-digit display	Cause and/or Corrective Actions
C:04:□□	<ul style="list-style-type: none"> You are using a battery pack that is not an "InfoLITHIUM" battery pack. Use an "InfoLITHIUM" battery pack. (p. 14)
C:21:□□	<ul style="list-style-type: none"> Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 73)
C:22:□□	<ul style="list-style-type: none"> The video heads are dirty. Clean the heads using the Sony V8-25CLD cleaning cassette (not supplied). (p. 74)
C:31:□□	<ul style="list-style-type: none"> A malfunction other than the above that you can service has occurred.
C:32:□□	<ul style="list-style-type: none"> Remove the cassette and insert it again, then operate your camcorder. Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate your camcorder.
E:61:□□	<ul style="list-style-type: none"> A malfunction that you cannot service has occurred.
E:62:□□	<ul style="list-style-type: none"> Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit code. (example: E:61:10)

If you are unable to rectify the problem even if you try corrective actions a few times, contact your Sony dealer or local authorized Sony service facility.

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Troubleshooting

Symptom	Cause and/or Corrective Actions
The battery pack is quickly discharged.	<ul style="list-style-type: none"> The operating temperature is too low. The battery pack is not fully charged. Charge the battery pack again. (p. 10) The battery pack is completely dead, and cannot be recharged. Replace with a new battery pack. (p. 9)
The battery remaining indicator does not indicate the correct time.	<ul style="list-style-type: none"> You have used the battery pack in an extremely hot or cold environment for a long time. The battery pack is completely dead, and cannot be recharged. Replace with a new battery pack. (p. 9) The battery is dead. Use a charged battery pack. (p. 9, 10)
The power goes off although the battery remaining indicator indicates that the battery pack has enough power to operate.	<ul style="list-style-type: none"> Charge the battery pack fully again so that the indication on the battery remaining indicator is correct.
The cassette cannot be removed from the holder.	<ul style="list-style-type: none"> The power source is disconnected. Connect it firmly. (p. 9, 14) The battery is dead. Use a charged battery pack. (p. 9, 10)
The and indicators flash and no functions except for cassette ejection work.	<ul style="list-style-type: none"> Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 73)

Others

Symptom	Cause and/or Corrective Actions
The Remote Commander supplied with your camcorder does not work. (CCD-TRV57/TRV67/TRV87 only)	<ul style="list-style-type: none"> COMMANDER is set to OFF in the menu settings. Set it to ON. (p. 55) Something is blocking the infrared rays. Remove the obstacle. The batteries inserted in the battery holder with the + - polarities incorrectly matching the + - marks. Insert the batteries with the correct polarity. (p. 84) The batteries are dead. Insert new ones. (p. 84)
The date or time indicator does not appear, and the bars "----" appear.	<ul style="list-style-type: none"> Reset the date and time. (p. 61)
The picture from a TV or VCR does not appear even when your camcorder is connected to outputs on the TV or VCR. (CCD-TRV87 only)	<ul style="list-style-type: none"> DISPLAY is set to V-OUT/LCD in the menu settings. Set it to LCD. (p. 55)
The melody or beep sounds for 5 seconds.	<ul style="list-style-type: none"> Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour to acclimatize. (p. 73) Some troubles has occurred in your camcorder. Remove the cassette and insert it again, then operate your camcorder.
While charging the battery pack, no indicator appears or the indicator flashes in the display window.	<ul style="list-style-type: none"> The AC power adaptor is disconnected. Connect it firmly. (p. 10) Something is wrong with the battery pack. Contact your Sony dealer or local authorized Sony service facility.

Additional Information

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Warning indicators and messages

If indicators and messages appear in the viewfinder, on the LCD screen or in the display window, check the following: See the page in parentheses () for more information. The indicators and messages are displayed in yellow.

Warning indicators

The video heads are dirty

Slow flashing:

- You need to clean the heads using the Sony V8-25CLD cleaning cassette (not supplied) (p. 74).

The battery is dead or nearly dead

Slow flashing:

- The battery is nearly dead.

Fast flashing:

- The battery is dead (p. 10)
- The battery is completely dead, and cannot be recharged.

Depending on conditions, the indicator may flash, even if there are 5 to 10 minutes remaining.

Warning indicator as to tape

Slow flashing:

- The tape is near the end.
- No tape is inserted (p. 15).*
- The write-protect tab on the cassette is out (red) (p. 15).*

Fast flashing:

- The tape has run out (p. 15, 24).*

The lithium battery is weak or is not installed

(p. 65)

Self-diagnosis display (p. 70)

Moisture condensation has occurred*

- Fast flashing:
- Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette compartment open (p. 73).

You need to eject the cassette

Slow flashing:

- The write-protect tab on the cassette is out (red) (p. 15).*

Fast flashing:

- Moisture condensation has occurred (p. 73).
- The tape has run out (p. 15, 24).*
- The self-diagnosis display function is activated (p. 70).*

Warning messages

- CLOCK SET Reset the date and time. (p. 61)
- For "InfoLITHIUM" BATTERY ONLY Use an "InfoLITHIUM" battery pack. (p. 14)

CLEANING CASSETTE

The video heads are dirty. (p. 74)

START/STOP KEY

Press the START/STOP button to activate the ORC setting. This message is displayed in white. (p. 58)

ORC

The ORC setting is working. This message is displayed in white. (p. 58)

COPY INHIBIT

You tried to record a picture that has a copyright control signal. (CCD-TRV87 only) (p. 64)

* You hear the melody or beep sound.

Additional Information

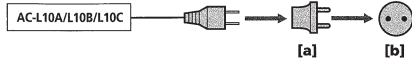
71

Using your camcorder abroad

Using your camcorder abroad

You can use your camcorder in any country or area with the AC power adaptor supplied with your camcorder within 100 V to 240 V AC, 50/60 Hz.

When charging the battery pack, use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].



Your camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV with VIDEO/AUDIO input jack. The following shows TV color systems used overseas.

NTSC system

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system

Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system

Brazil

PAL-N system

Argentina, Paraguay, Uruguay

SECAM system

Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference. Select WORLD TIME in the menu settings. See page 60 for more information.

Maintenance information and precautions

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, the beep sounds and the indicator flashes. When the indicator flashes at the same time, the cassette is inserted in your camcorder. If moisture condenses on the lens, the indicator will not appear.

If moisture condensation occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette compartment open. Your camcorder can be used again if the indicator does not appear when the power is turned on again.

Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a hot place as follows:

- You bring your camcorder from a ski slope into a place warmed up by a heating device
- You bring your camcorder from an air-conditioned car or room into a hot place outside
- You use your camcorder after a squall or a shower
- You use your camcorder in a high temperature and humidity place

How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and tightly seal it. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about 1 hour).

Additional Information

72

73

Maintenance information and precautions

Maintenance information

Cleaning the video head

To ensure normal recording and clear pictures, clean the video heads. The video head may be dirty when:

- The indicator and "CLEANING CASSETTE" message appear one after another or the indicator flashes on the LCD screen or in the viewfinder.
- Playback pictures contain noise.
- Playback pictures are hardly visible.
- Playback pictures do not appear.

If this happens, clean the video heads with the Sony V8-25CLD cleaning cassette (not supplied).



[a] Slightly dirty
[b] Very dirty

Note on video heads

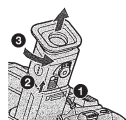
When the playback pictures are still contain noise even if you have cleaned the video heads with a cleaning cassette, the video heads may have worn down due to long use. If this is the case, they must be replaced with new heads. Contact your Sony dealer or local authorized Sony service facility.

Cleaning the LCD screen

If fingerprints or dust make the LCD screen dirty, we recommend using a LCD Cleaning Kit (not supplied) to clean the LCD screen.

Removing dust from inside the viewfinder

- (1) Remove the screw with a screwdriver (not supplied). (2) Then, while holding the RELEASE knob up, (3) turn the eyecup in a counterclockwise direction and pull it out.
- (2) Clean the surface with a commercially available blower for a still camera.
- (3) Turn the eyecup in a clockwise direction, then replace the screw.



Caution

Do not remove any other screws. You may remove only the screw to remove the eyecup.

Maintenance information and precautions

Precautions

Camcorder operation

- Operate your camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this operating instructions.
- If any solid object or liquid get inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF (CHARGE) when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- Keep your camcorder away from strong magnetic fields or mechanical vibration.
- Do not touch the LCD screen with your fingers or a sharp-pointed object.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

Built-in light

- Do not knock or jolt the built-in light while it is turned on as it may damage the bulb or shorten the life of the bulb.
- Do not leave the built-in light on while it is resting on or against something; it may cause a fire or damage the built-in light.

On handling tapes

Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape and if the recording tab is in or out.

Camcorder care

- Remove the tape, and periodically turn on the power, operate the CAMERA and VTR (CCD-TRV87)/PLAYER (CCD-TRV37/TRV57/TRV67) sections and play back a tape for about 5 minutes when your camcorder is not to be used for a long time.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into your camcorder. When you use your camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause your camcorder to malfunction, and sometimes this malfunction cannot be repaired.

Additional Information

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75

Maintenance information and precautions

AC power adaptor

- Unplug the unit from the wall outlet when you are not using the unit for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM receivers and video equipment disturb AM reception and video operation.
- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
 - Extremely hot or cold
 - Dusty or dirty
 - Very humid
 - Vibrating

Battery pack

- Use only the specified charger or video equipment with the charging function.
- To prevent accident from a short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.
- Keep the battery pack dry.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Attach the battery pack to the video equipment securely.
- Charging while some capacity remains does not affect the original battery capacity.

Notes on dry batteries

– CCD-TRV57/TRV67/TRV87 only

- To avoid possible damage from battery leakage or corrosion, observe the following:
- Be sure to insert the batteries with the + – polarities matched to the + – marks.
 - Dry batteries are not rechargeable.
 - Do not use a combination of new and old batteries.
 - Do not use different types of batteries.
 - Current flows from batteries when you are not using them for a long time.
 - Do not use leaking batteries.

If batteries are leaking

- Wipe off the liquid in the battery compartment carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

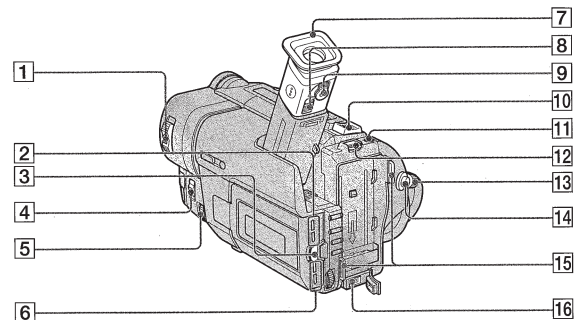
If any problem occurs, unplug your camcorder and contact your nearest Sony dealer.

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— Quick Reference —

Identifying the parts and controls

Camcorder



- | | |
|-------------------------------|--|
| 1 POWER switch (p. 16) | 9 Viewfinder lens adjustment lever (p. 19) |
| 2 LCD BRIGHT buttons (p. 17) | 10 Power zoom lever (p. 18) |
| 3 OPEN button (p. 16) | 11 PHOTO button (CCD-TRV87 only) (p. 30) |
| 4 FOCUS switch (p. 44) | 12 BATT RELEASE lever (p. 9) |
| 5 NEAR/FAR dial (p. 44) | 13 STANDBY switch (p. 16) |
| 6 VOLUME buttons (p. 24) | 14 START/STOP button (p. 16) |
| 7 Eyecup (p. 74) | 15 Hooks for shoulder strap (p. 81) |
| 8 Eyecup RELEASE knob (p. 74) | 16 DC IN jack (p. 4, 10) |

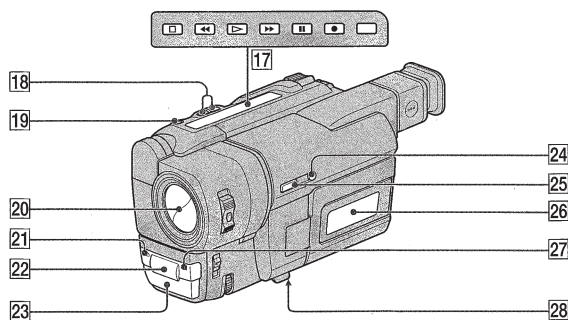


This mark indicates that this product is a genuine accessory for Sony video products. When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Quick Reference


79

Identifying the parts and controls



- | | |
|---|--|
| 17 Video control buttons (p. 24, 26, 54) | 22 Infrared rays emitter (p. 21, 28) |
| ■ STOP (stop) | 23 Microphone |
| ◀ REW (rewind) | 24 SUPER NIGHTSHOT button (CCD-TRV87 only) (p. 21) |
| ▶ PLAY (playback) | 25 NIGHTSHOT switch (p. 21) |
| ▶▶ FF (fastforward) | 26 Display window (p. 85) |
| ⏸ PAUSE (pause) | 27 Remote sensor (CCD-TRV57/TRV67/TRV87 only) (p. 84) |
| ● REC (recording) (CCD-TRV87 only) | 28 Tripod receptacle (base) |
| 18 EDITSEARCH button (p. 23) | Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage your camcorder. |
| 19 S.LASER LINK button (CCD-TRV87 only) (p. 39) | |
| 20 Lens cover (p. 16) | |
| 21 Camera recording lamp (p. 16) | |

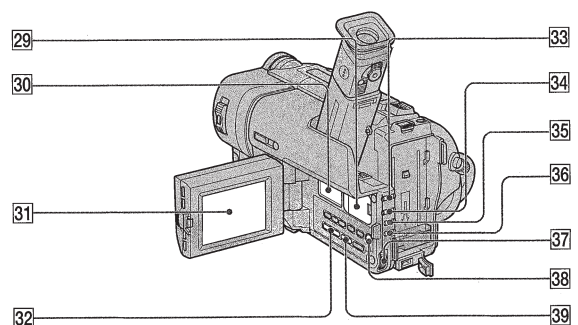
What is SUPER LASER LINK? (CCD-TRV87 only)

The SUPER LASER LINK system sends and receives pictures and sound between video equipment having the  mark by using infrared rays.



These are trademarks.

Identifying the parts and controls



- | | |
|---|----------------------------------|
| 29 Lithium battery compartment (p. 65) | 35 PROGRAM AE button (p. 42) |
| 30 Speaker | 36 EXPOSURE button (p. 43) |
| 31 LCD screen (p. 17) | 37 SEL/PUSH EXEC dial (p. 55) |
| 32 DIGITAL EFFECT button (CCD-TRV87 only) (p. 39) | 38 MENU button (p. 55) |
| 33 FADER button (p. 35) | 39 PICTURE EFFECT button (p. 37) |
| 34 BACK LIGHT button (p. 20) | |

Attaching the shoulder strap

Attach the shoulder strap supplied with your camcorder to the hooks for the shoulder strap.

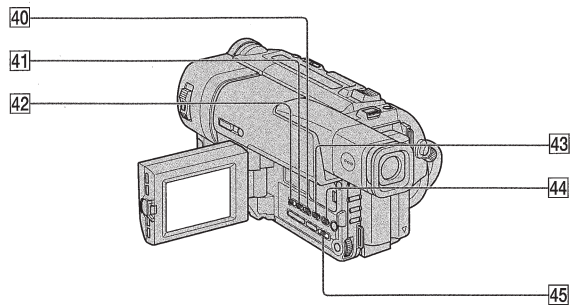


Quick Reference

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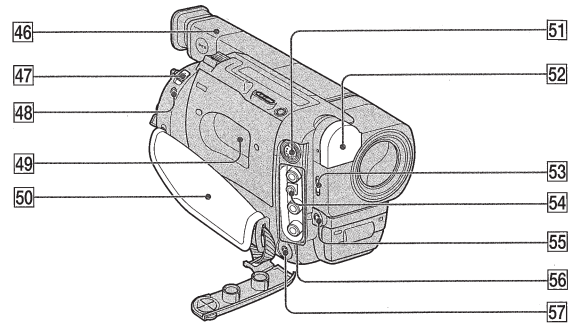
80

Identifying the parts and controls



- 40 COUNTER RESET button (p. 17)
- 41 TIME button (p. 22)
- 42 DATE button (p. 22)
- 43 DISPLAY button (p. 25)
- 44 END SEARCH button (p. 23)
- 45 TITLE button (p. 45)

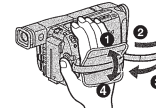
Identifying the parts and controls



- 46 Viewfinder (p. 5)
- 47 EJECT switch (p. 15)
- 48 LANC control jack
LANC stands for Local Application Control Bus System. The LANC control jack is used for controlling the tape transport of video equipment and other peripherals connected to the video equipment. This jack has the same function as the jack indicated as CONTROL L or REMOTE.
- 49 Cassette compartment (p. 15)
- 50 Grip strap
- 51 S VIDEO jack (CCD-TRV67/TRV87 only) (p. 27)
- 52 Built-in light (p. 49)
- 53 LIGHT switch (p. 49)
- 54 RFU DC OUT (RFU adaptor DC output jack) (p. 28)
- 55 MIC jack (PLUG IN POWER)
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone. If you connect a 2-pin microphone, supply power from DC OUT jack. In this case, WIND in the menu settings does not function. (CCD-TRV87 only)
- 56 AUDIO/VIDEO jacks (p. 27)
- 57 (headphones) jack (CCD-TRV87 only)/(earphone) jack (CCD-TRV37/TRV57/TRV67 only)
When you use headphones (CCD-TRV87 only)/earphone (CCD-TRV37/TRV57/TRV67 only), the speaker on your camcorder is silent.

Quick Reference

Fastening the grip strap
Fasten the grip strap firmly.



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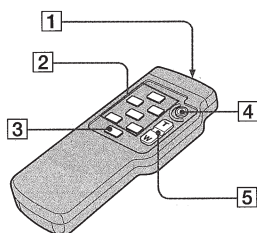
83

Identifying the parts and controls

Remote Commander

– CCD-TRV57/TRV67/TRV87 only

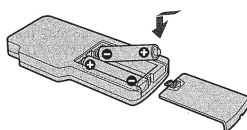
The buttons that have the same name on the Remote Commander as on your camcorder function identically to the buttons on your camcorder.



- 1 Transmitter
Point toward the remote sensor to control your camcorder after turning on your camcorder.
- 2 Video control buttons (p. 26)
- 3 DISPLAY button (p. 25)
- 4 START/STOP button (p. 16)
- 5 Power zoom button (p. 18)

To prepare the Remote Commander

Insert 2 size AA (R6) batteries by matching the + and – polarities on the batteries to the + – marks inside the battery compartment.



Notes on the Remote Commander

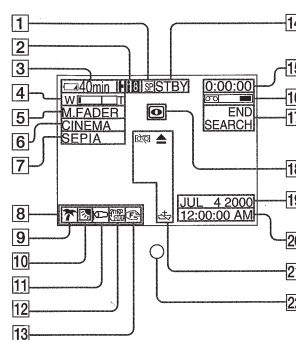
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- Your camcorder works in the commander mode VTR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the commander mode VTR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

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Identifying the parts and controls

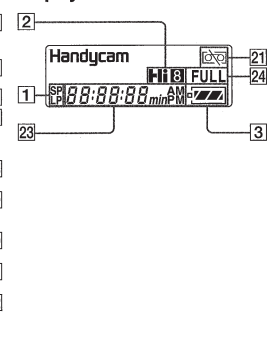
Operation indicators

LCD screen and Viewfinder



- 1 Recording mode indicator (p. 58)/Mirror mode indicator (p. 17)
- 2 Hi8 format indicator (CCD-TRV67/TRV87 only) (p. 20, 63)
- 3 Remaining battery time indicator (p. 20)
- 4 Exposure indicator (p. 43)/Zoom indicator (p. 18)
- 5 Fader indicator (p. 35)/Digital effect indicator (CCD-TRV87 only) (p. 39)
- 6 Wide mode indicator (p. 32)
- 7 Picture effect indicator (p. 37)
- 8 LCD bright indicator (p. 17)/Volume indicator (p. 24)
- 9 PROGRAM AE indicator (p. 41)
- 10 Backlight indicator (p. 20)
- 11 Wind indicator (CCD-TRV87 only) (p. 56)
- 12 SteadyShot off indicator (CCD-TRV57/TRV67/TRV87 only) (p. 37)
- 13 Manual focusing indicator (p. 44)

Display window



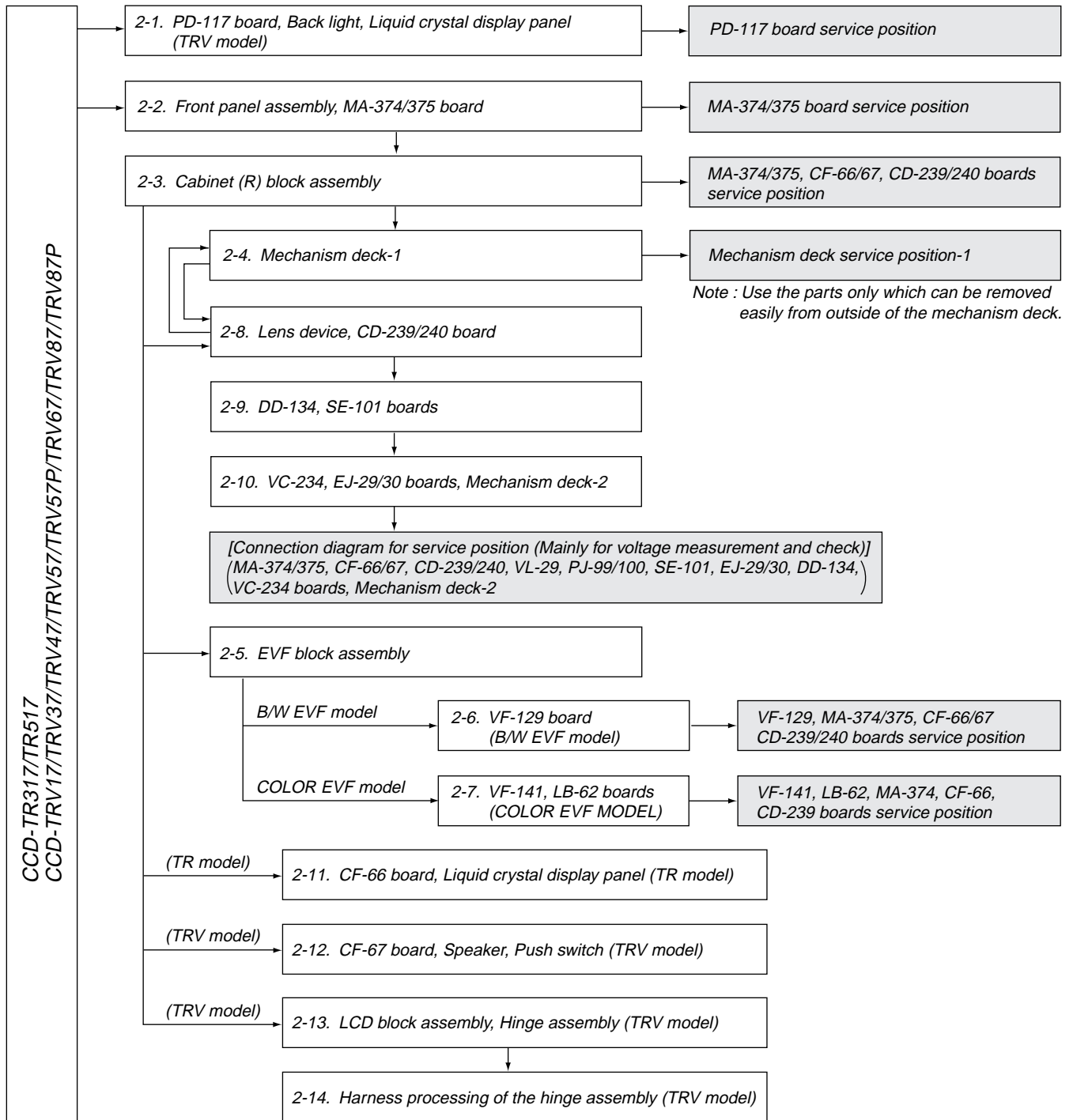
- 14 STBY/REC indicator (p. 20)/Video control mode indicator (p. 26)
- 15 Tape counter indicator (p. 20)/Self-diagnosis display indicator (p. 70)/Photo mode indicator (CCD-TRV87 only) (p. 30)
- 16 Remaining tape indicator (p. 20)
- 17 END SEARCH indicator (p. 23)
- 18 NIGHTSHOT indicator (p. 21)
- 19 AUTO DATE indicator (p. 62)/Date indicator (p. 22, 62)
- 20 Time indicator (p. 22, 62)
- 21 Warning indicators (p. 71)
- 22 Recording lamp (p. 16)
- 23 Date or time indicator (p. 22, 62)/Tape counter indicator (p. 20)/Self-diagnosis display indicator (p. 70)/Remaining battery time indicator (p. 10)
- 24 FULL charge indicator (p. 10)

Quick reference

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SECTION 2 DISASSEMBLY

The following flow chart shows the disassembly procedure.



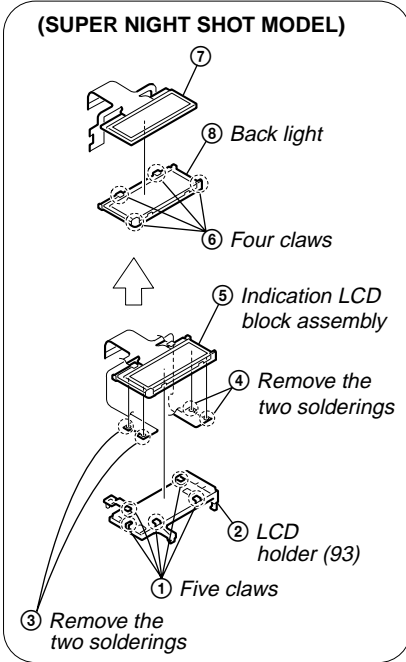
TR model	: CCD-TR317/TR517
TRV model	: CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
Super night shot model	: CCD-TRV87/TRV87P
Stereo model	: CCD-TRV87/TRV87P
TRV night shot model	: CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67
Video light model	: CCD-TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P
No video light model	: CCD-TR317/TR517/TRV47
B/W EVF model	: CCD-TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
COLOR EVF model	: CCD-TR517

NOTE: Follow the disassembly procedure in the numerical order given.

2-1. PD-117 BOARD, BACK LIGHT, LIQUID CRYSTAL DISPLAY PANEL (TRV MODEL)

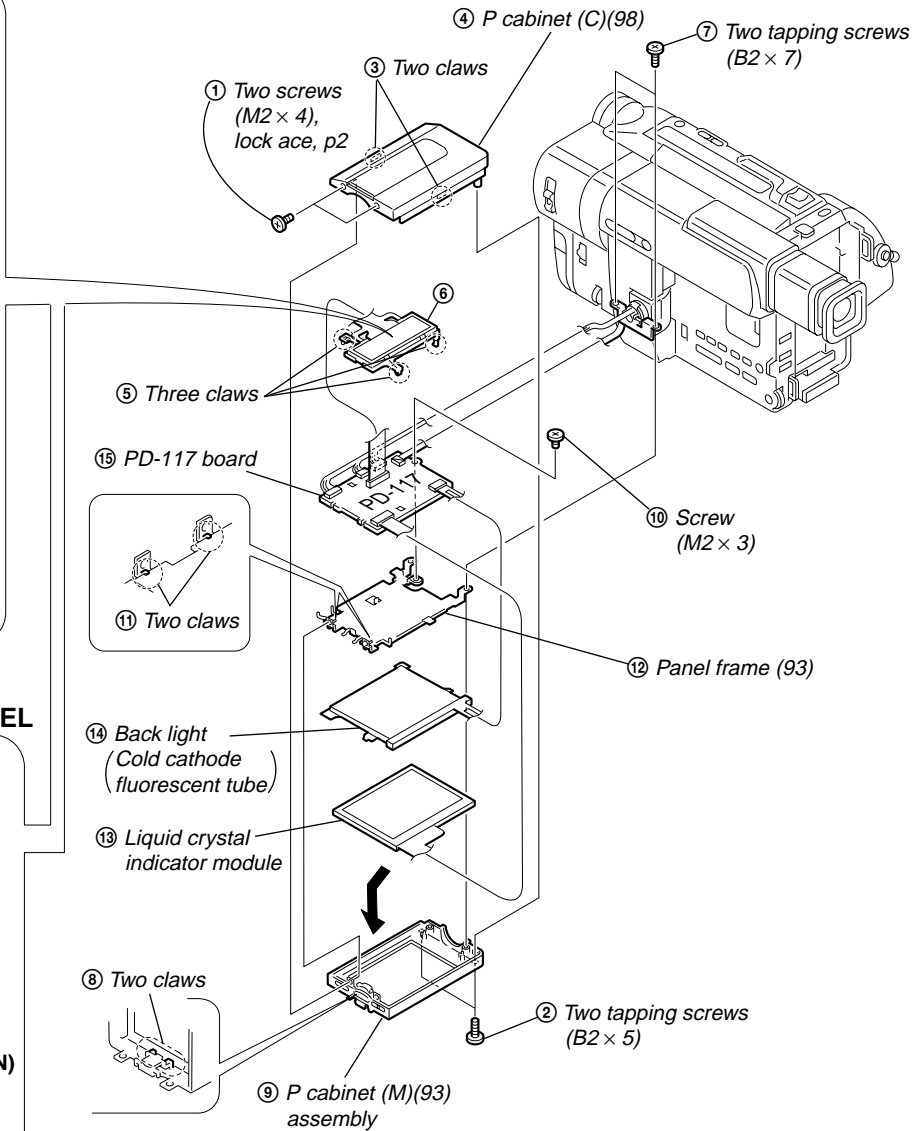
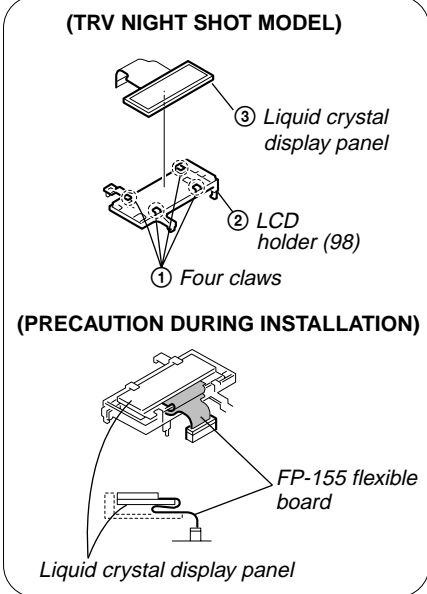
REMOVING THE BACK LIGHT

(SUPER NIGHT SHOT MODEL)

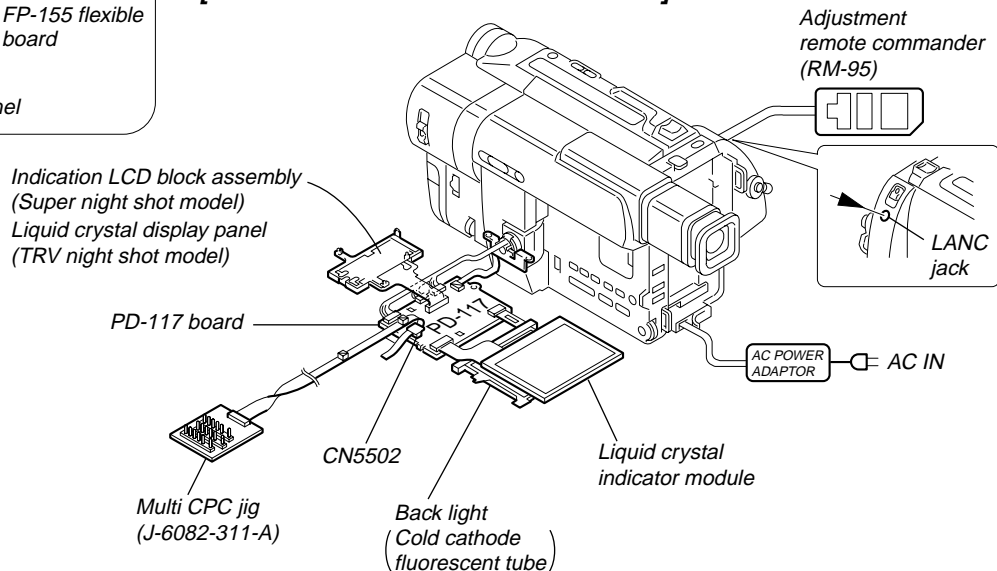


REMOVING THE LIQUID CRYSTAL DISPLAY PANEL

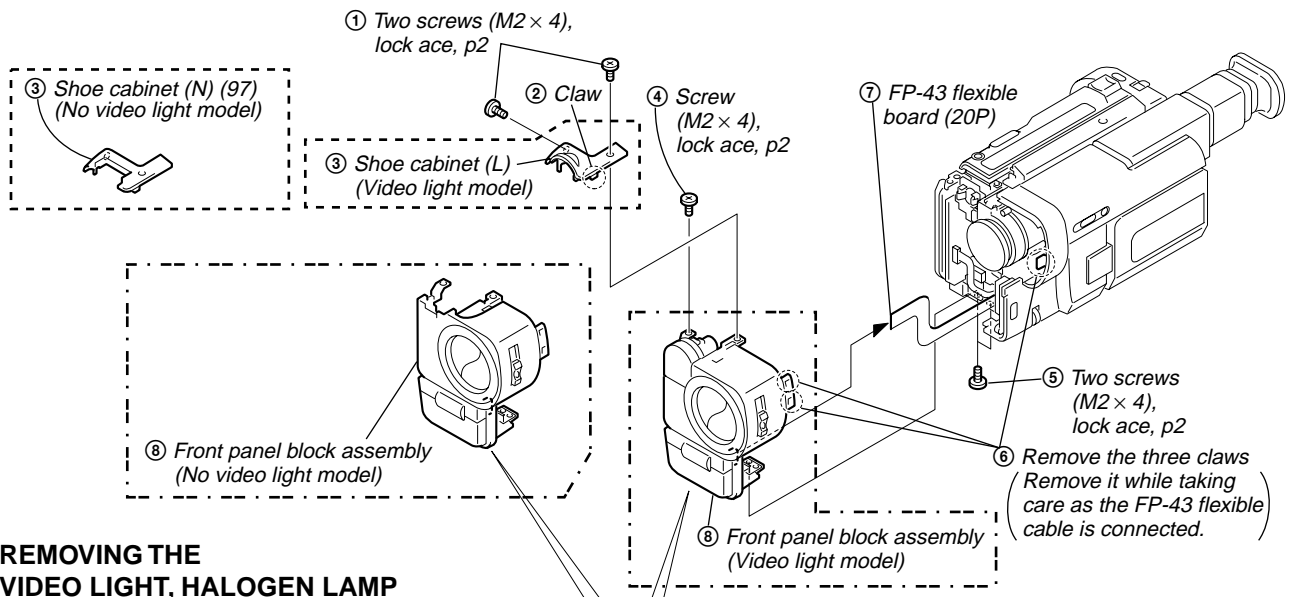
(TRV NIGHT SHOT MODEL)



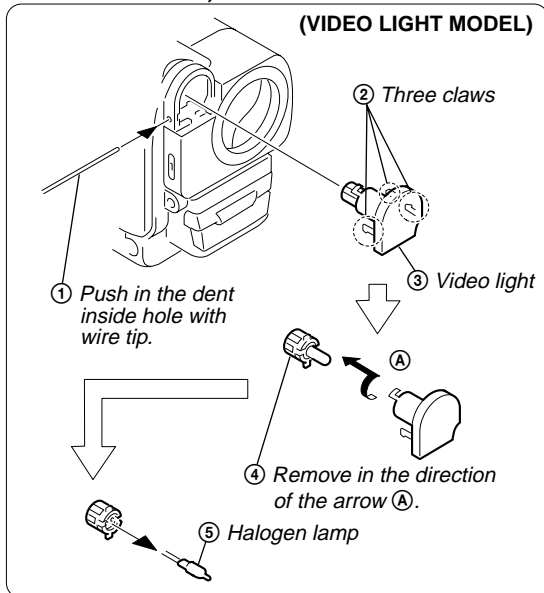
[PD-117 BOARD SERVICE POSITION]



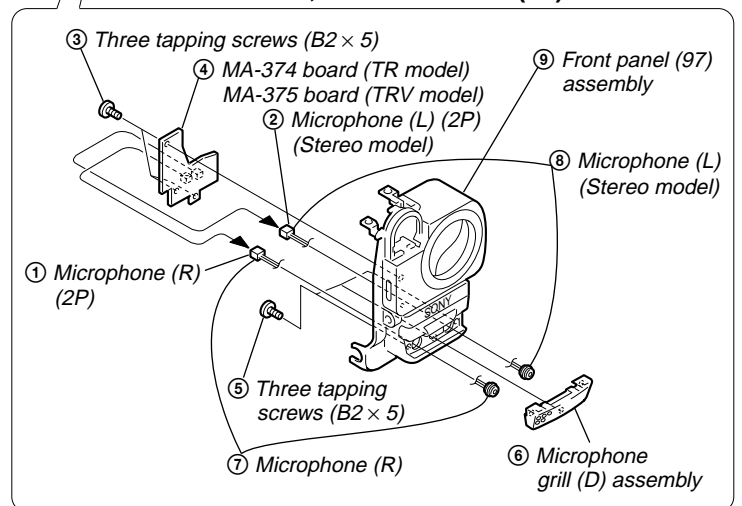
2-2. FRONT PANEL ASSEMBLY, MA-374/375 BOARD



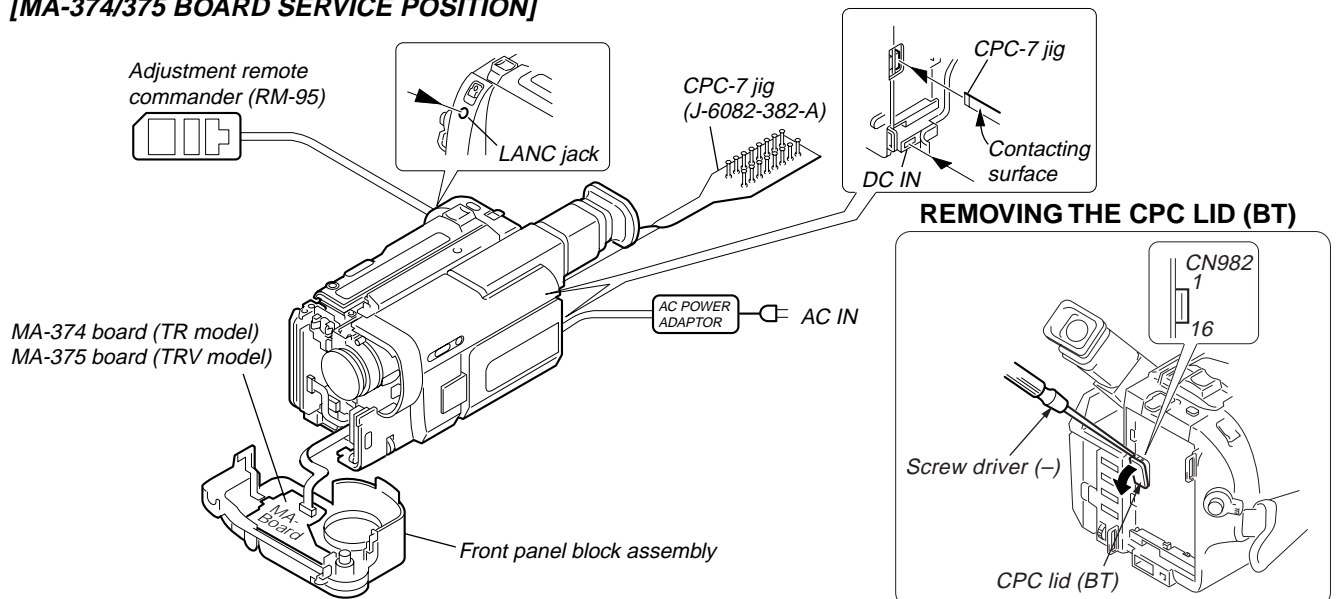
REMOVING THE VIDEO LIGHT, HALOGEN LAMP



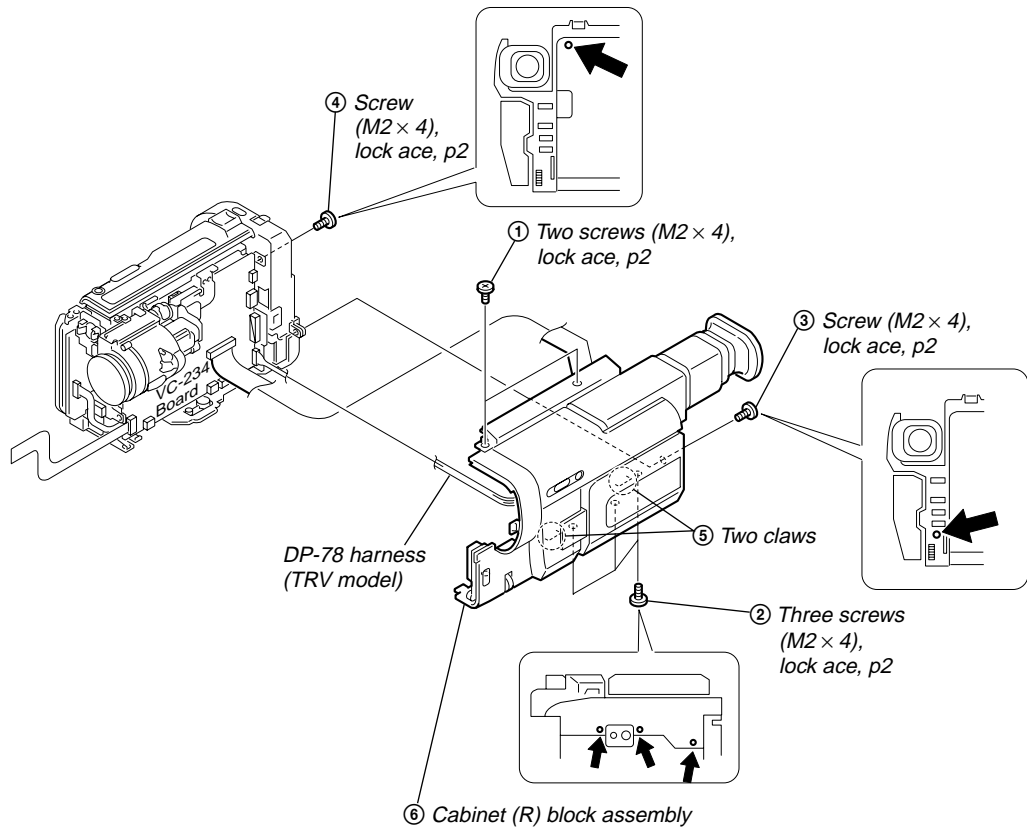
REMOVING THE MA-374/375 BOARD, MICROPHONE, FRONT PANEL (97) ASSEMBLY



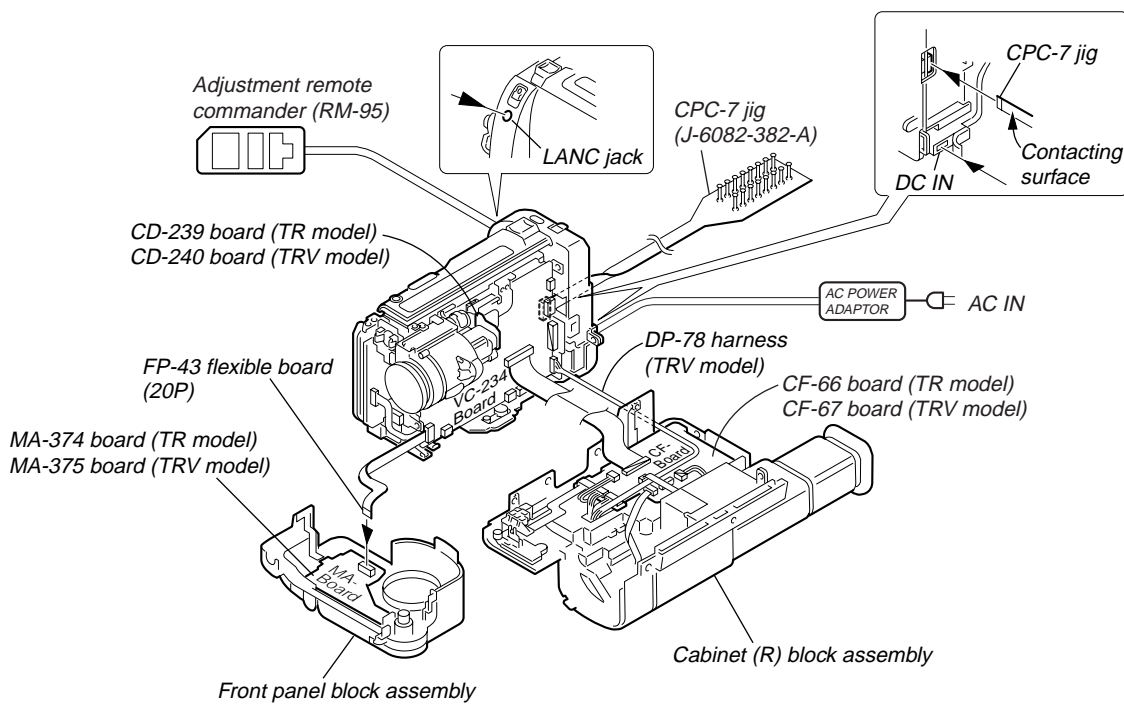
[MA-374/375 BOARD SERVICE POSITION]



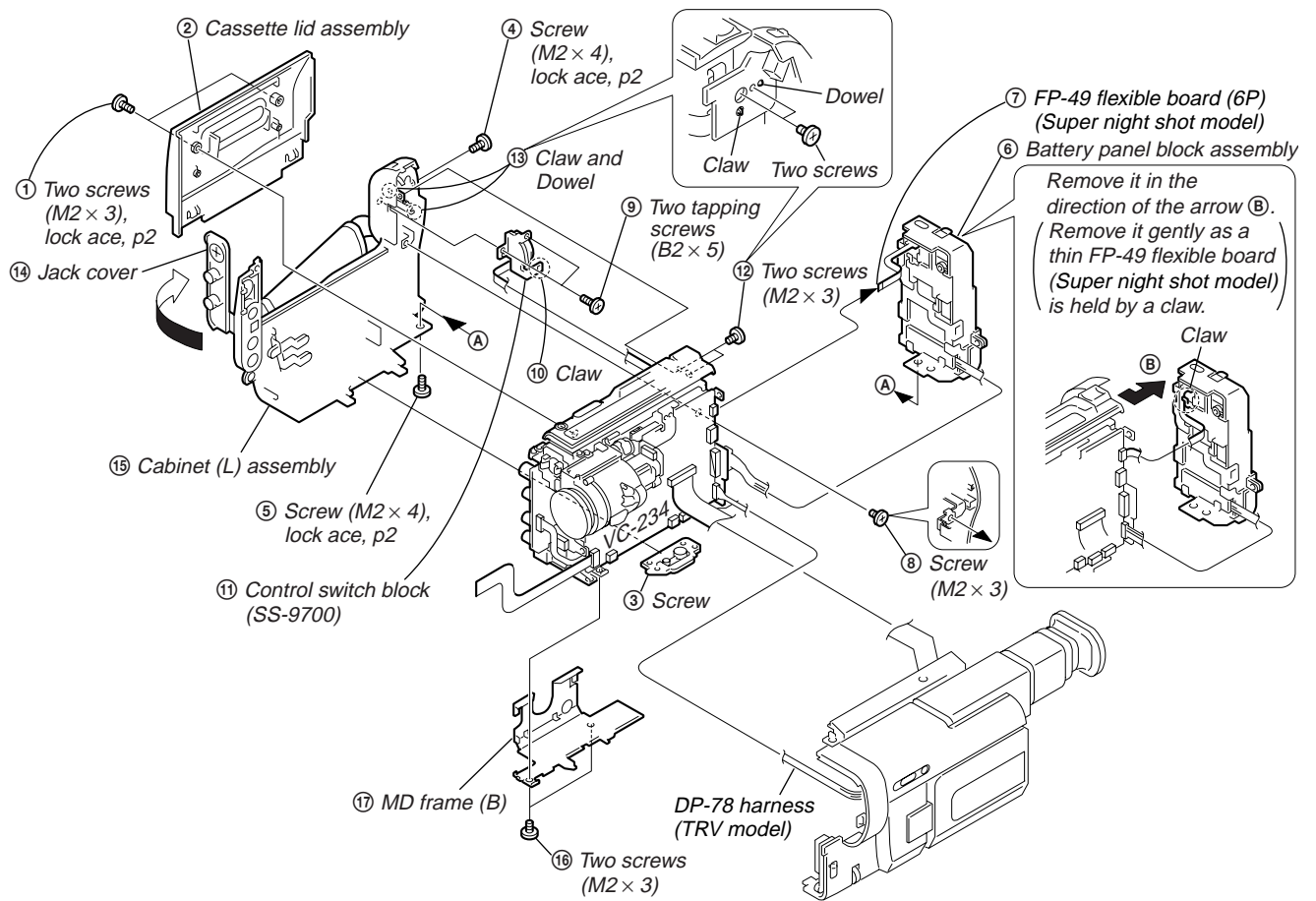
2-3. CABINET (R) BLOCK ASSEMBLY



[MA-374/375, CF-66/67, CD-239/240 BOARDS SERVICE POSITION]



2-4. MECHANISM DECK-1

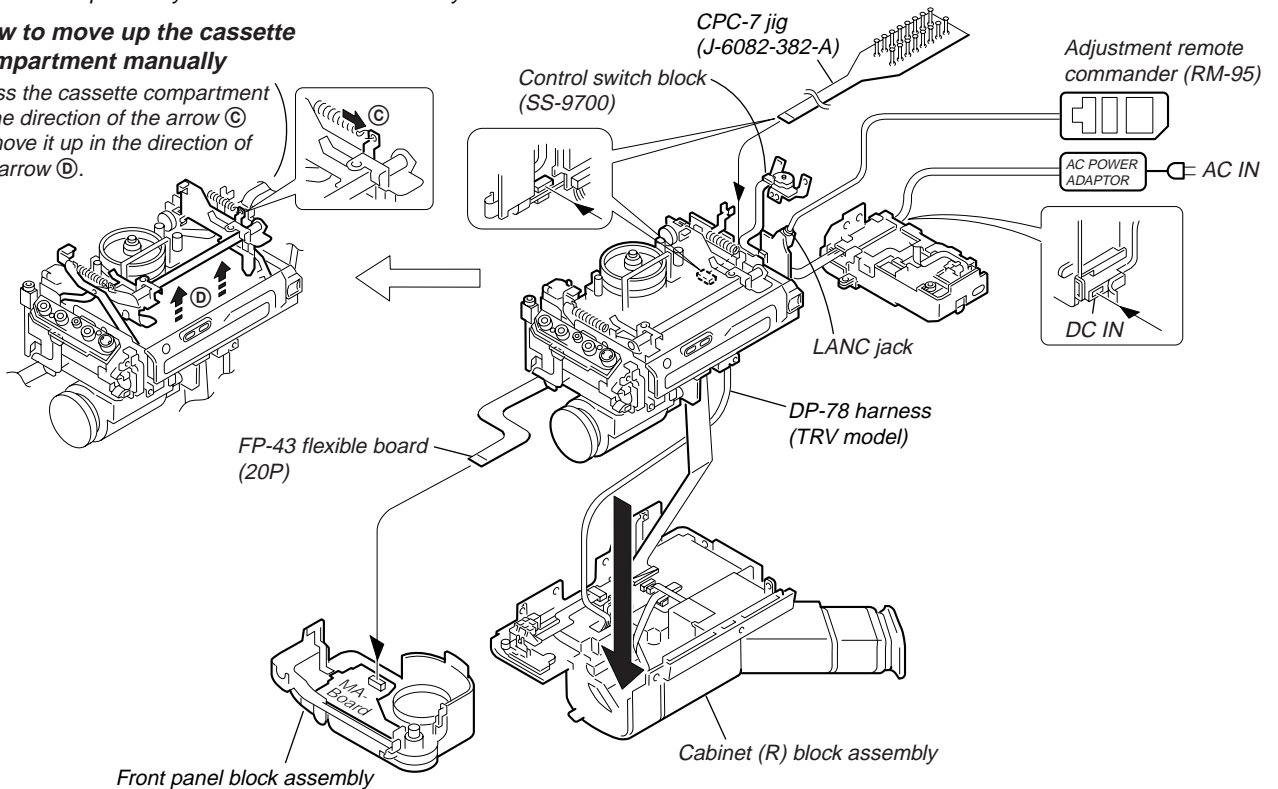


[MECHANISM DECK SERVICE POSITION-1]

Note: Use the parts only which can be removed easily from outside of the mechanism deck.

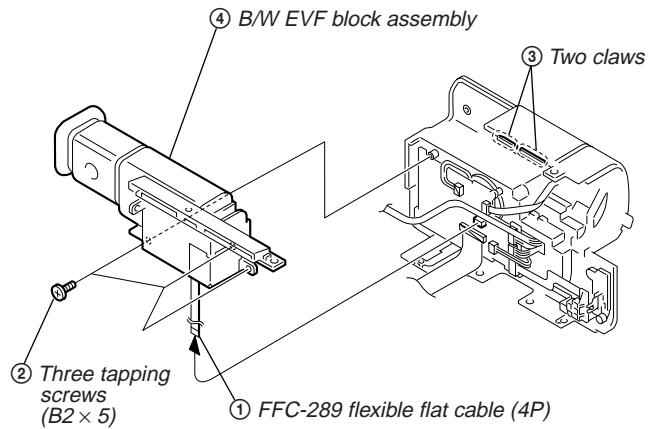
• How to move up the cassette compartment manually

(Press the cassette compartment in the direction of the arrow (C) to move it up in the direction of the arrow (D).)

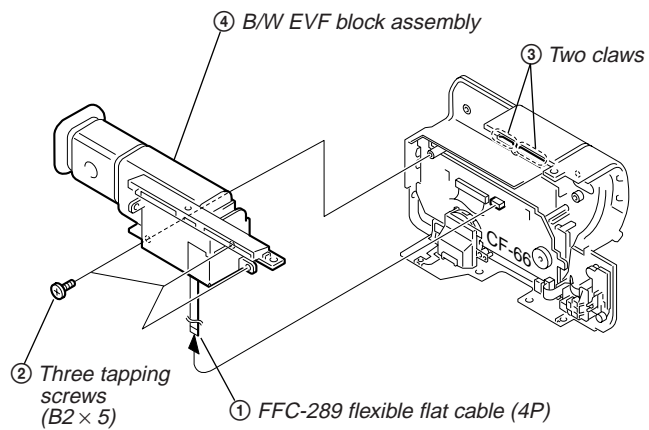


2-5. EVF BLOCK ASSEMBLY

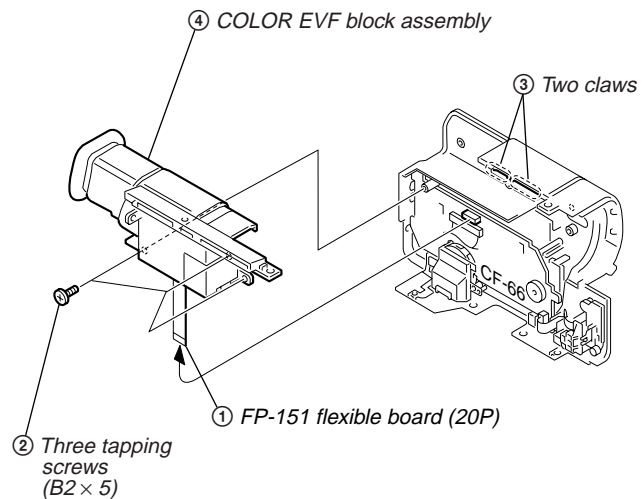
[TRV MODEL]



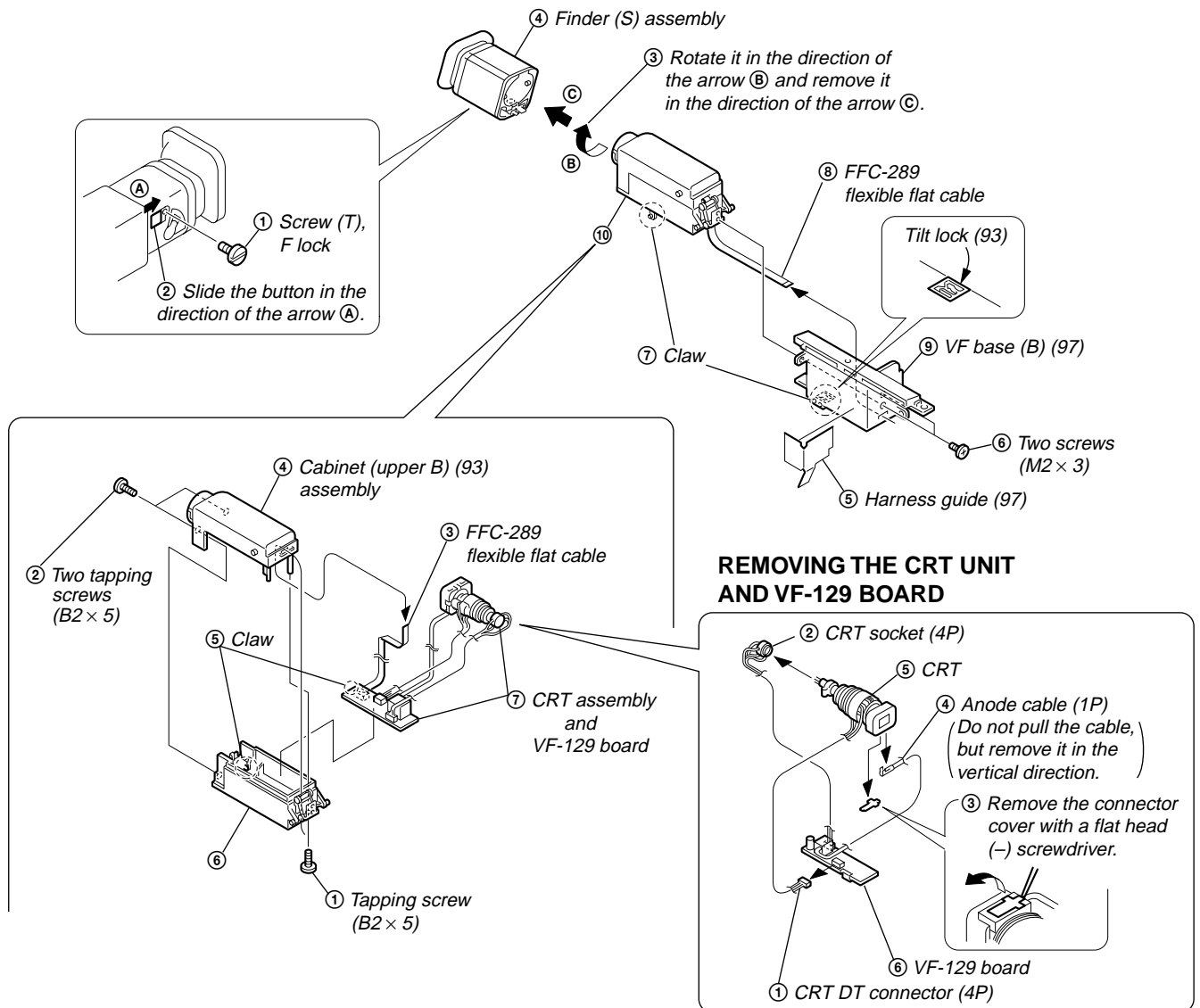
[TR317 MODEL]



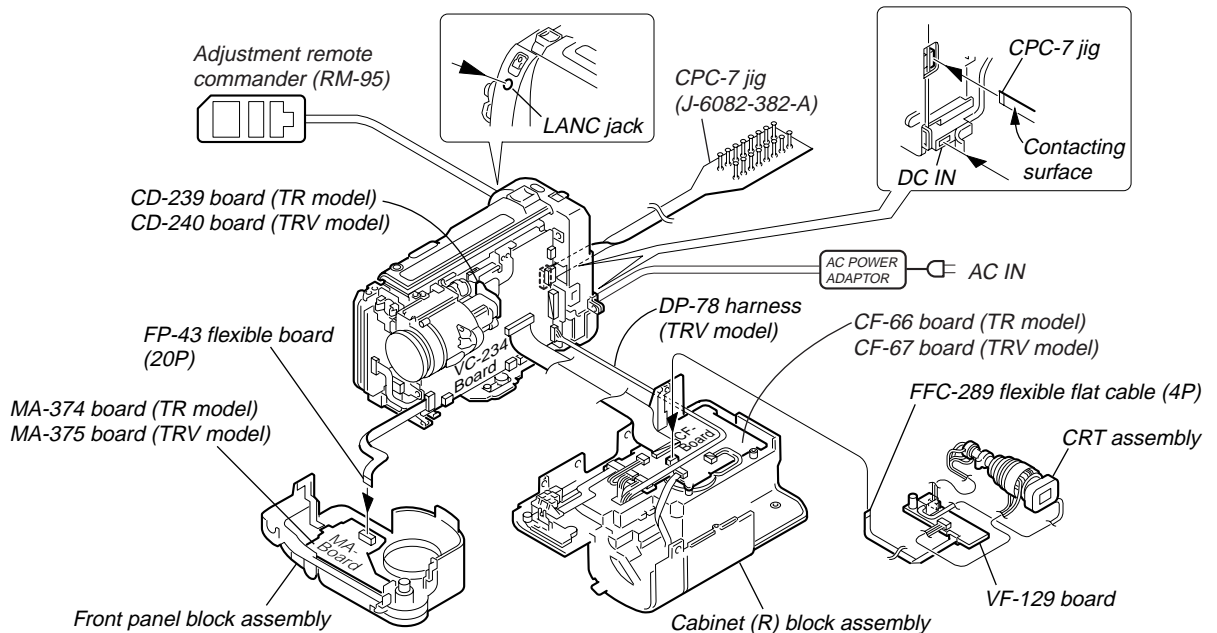
[TR517 MODEL]



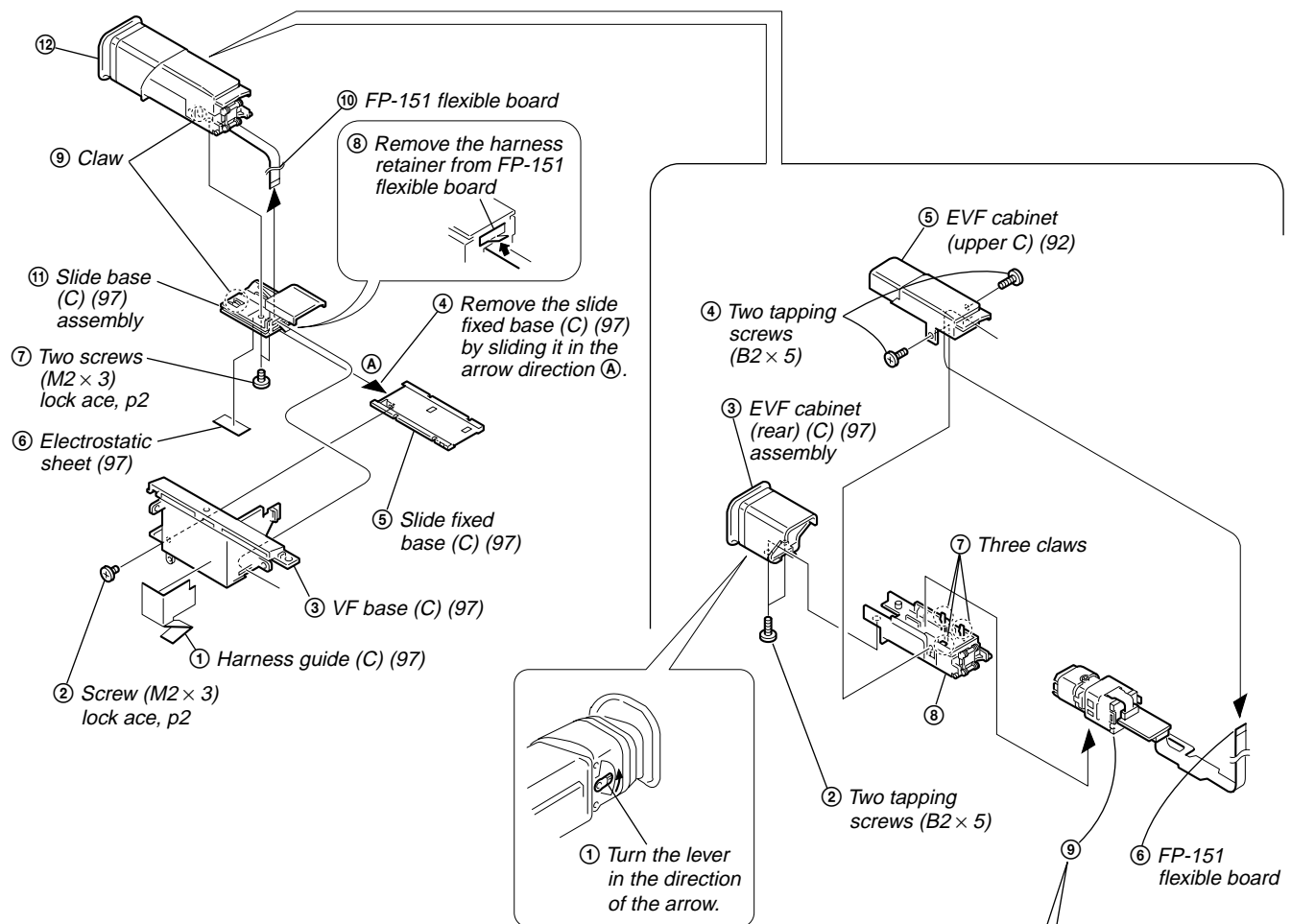
2-6. VF-129 BOARD (B/W EVF MODEL)



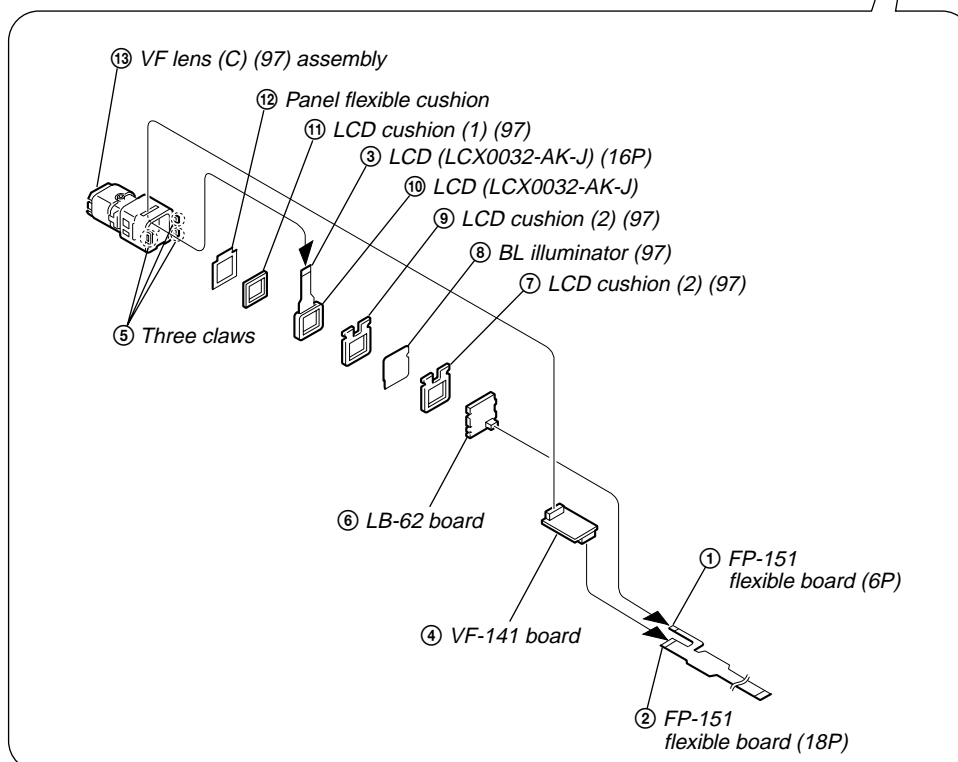
[VF-129, MA-374/375, CF-66/67, CD-239/240 BOARDS SERVICE POSITION]



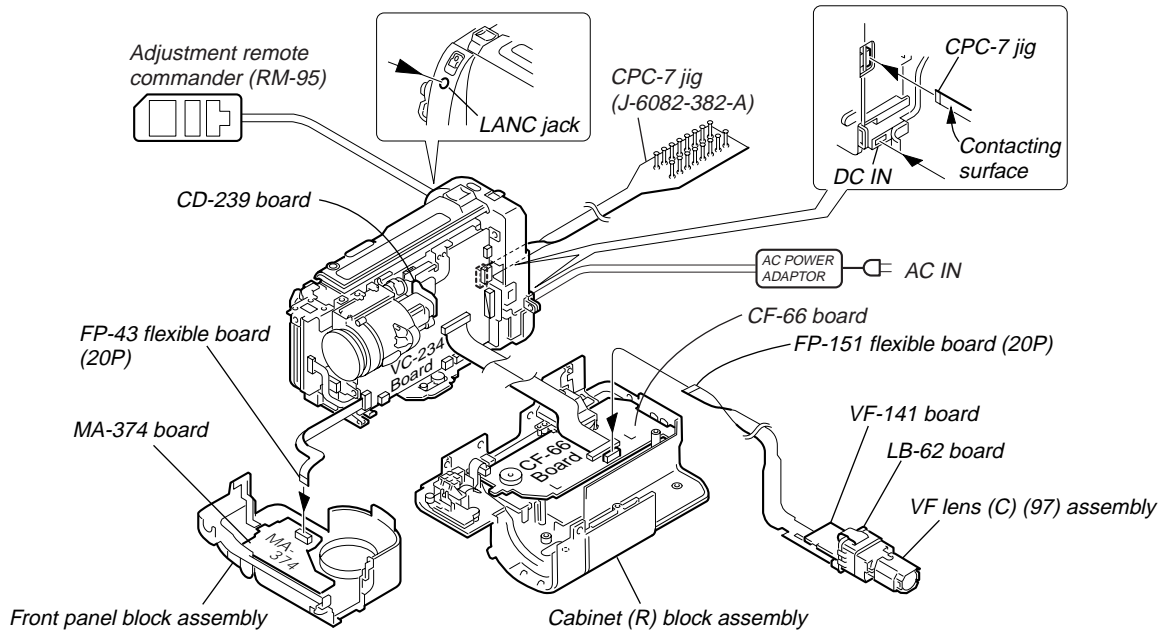
2-7. VF-141, LB-62 BOARDS (COLOR EVF MODEL)



REMOVING THE VF-141, LB-62 BOARDS

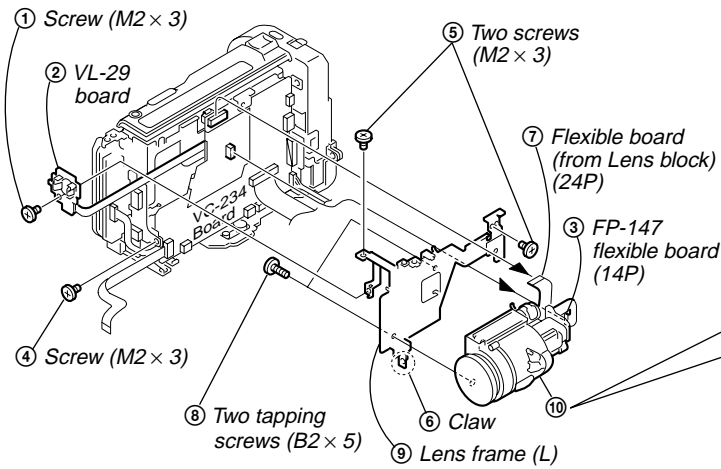


[VF-141, LB-62, MA-374, CF-66, CD-239 BOARDS SERVICE POSITION]

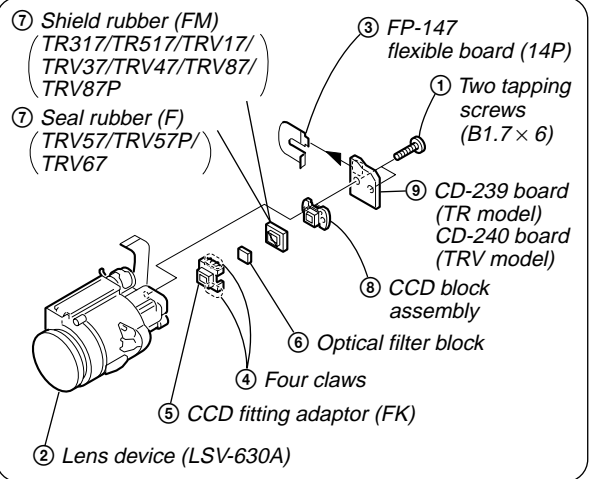


2-8. LENS DEVICE, CD-239/240 BOARD

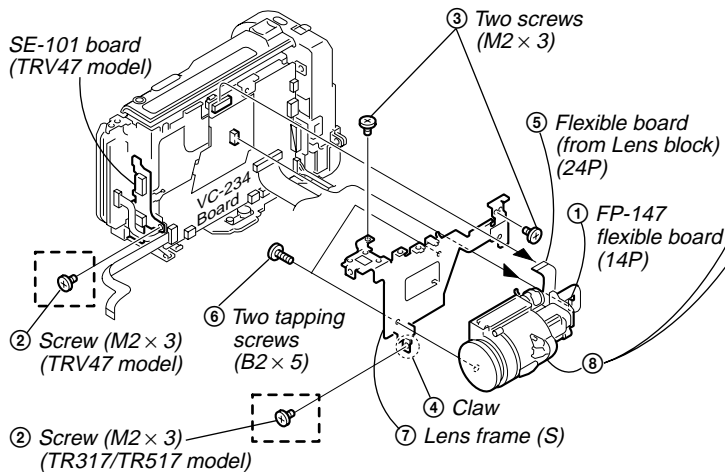
[VIDEO LIGHT MODEL]



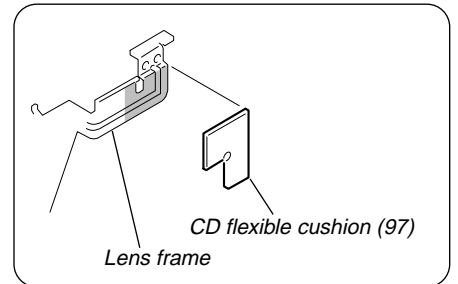
REMOVING THE LENS DEVICE, CD-239/240 BOARD



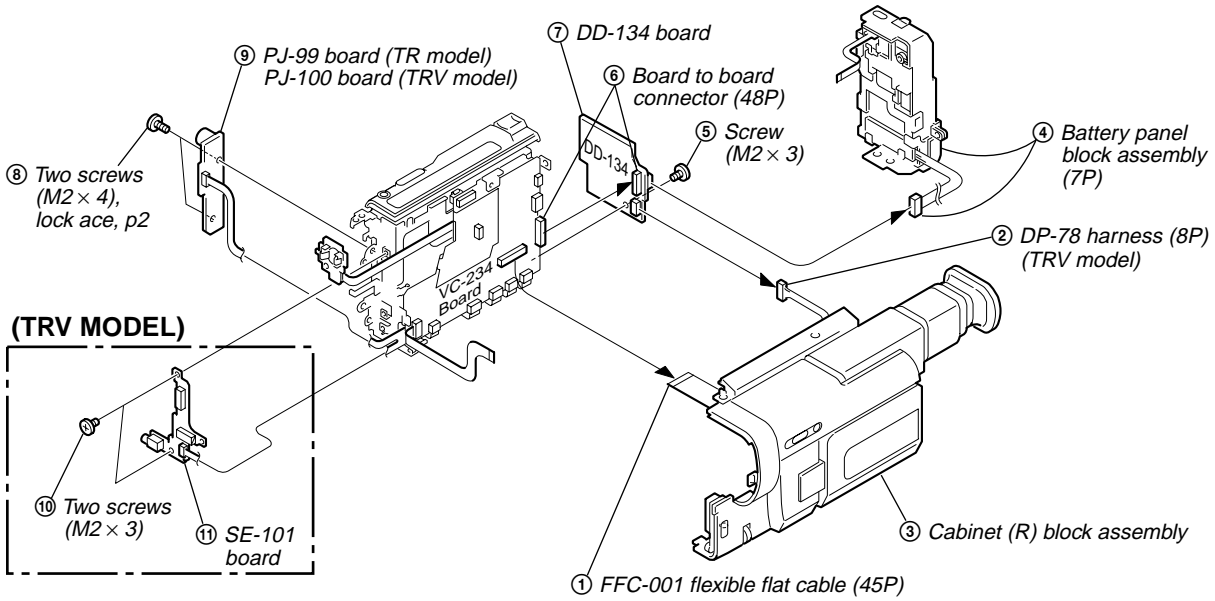
[NO VIDEO LIGHT MODEL]



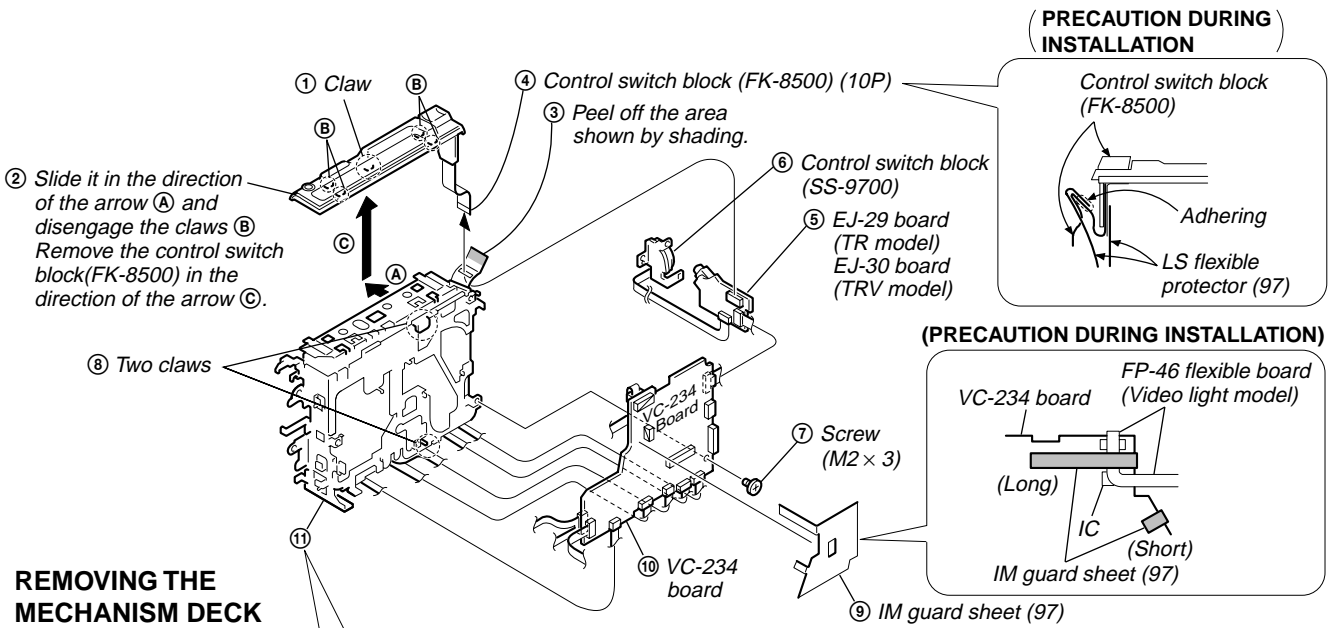
(PRECAUTION DURING INSTALLATION)



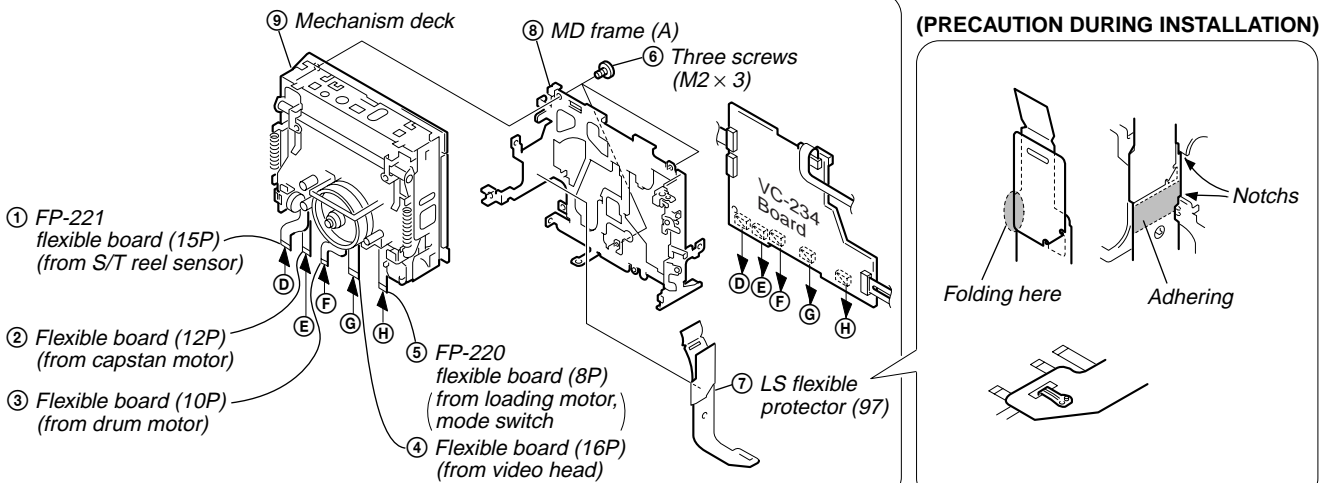
2-9. DD-134, SE-101 BOARDS



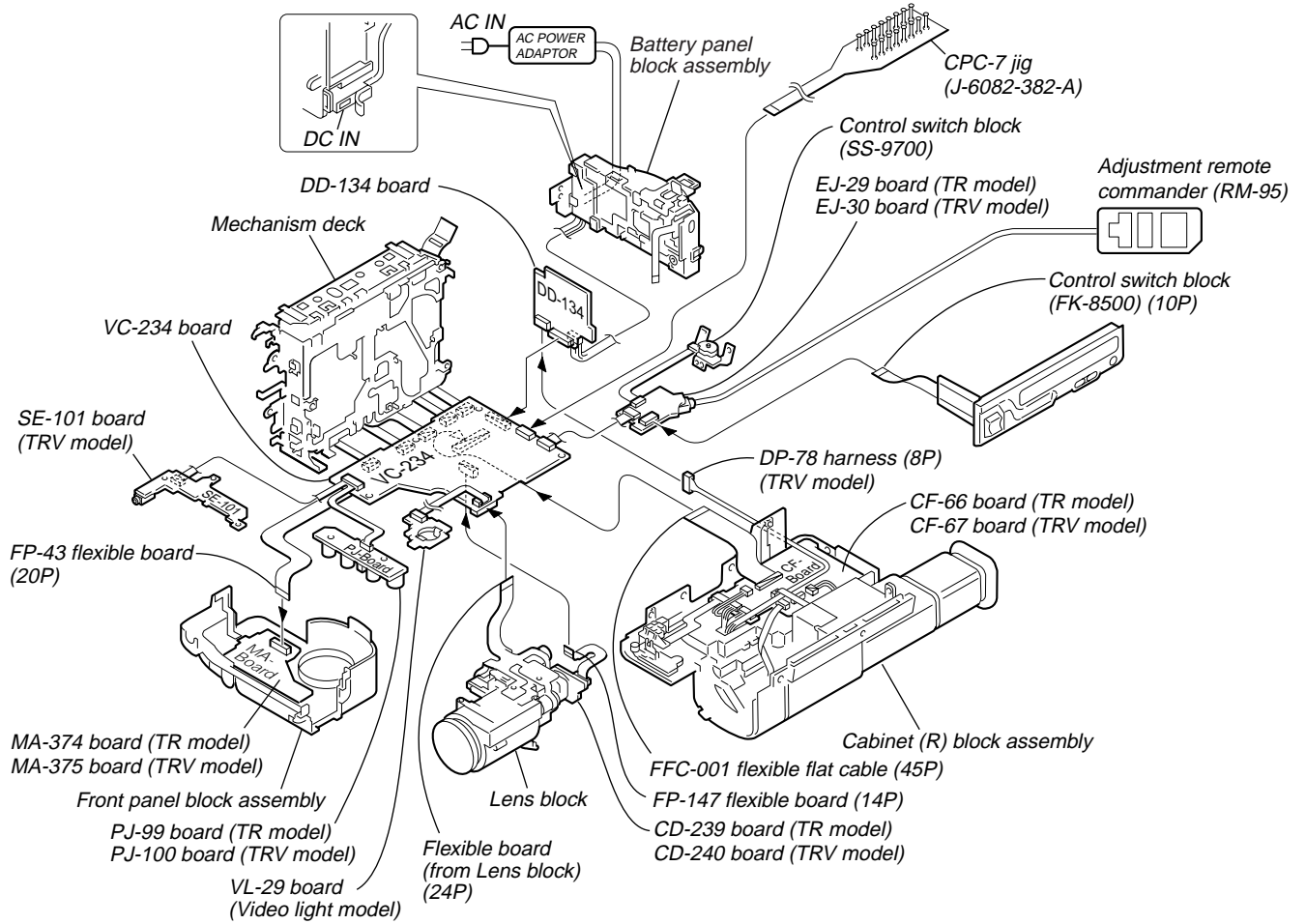
2-10. VC-234, EJ-29/30 BOARDS, MECHANISM DECK-2



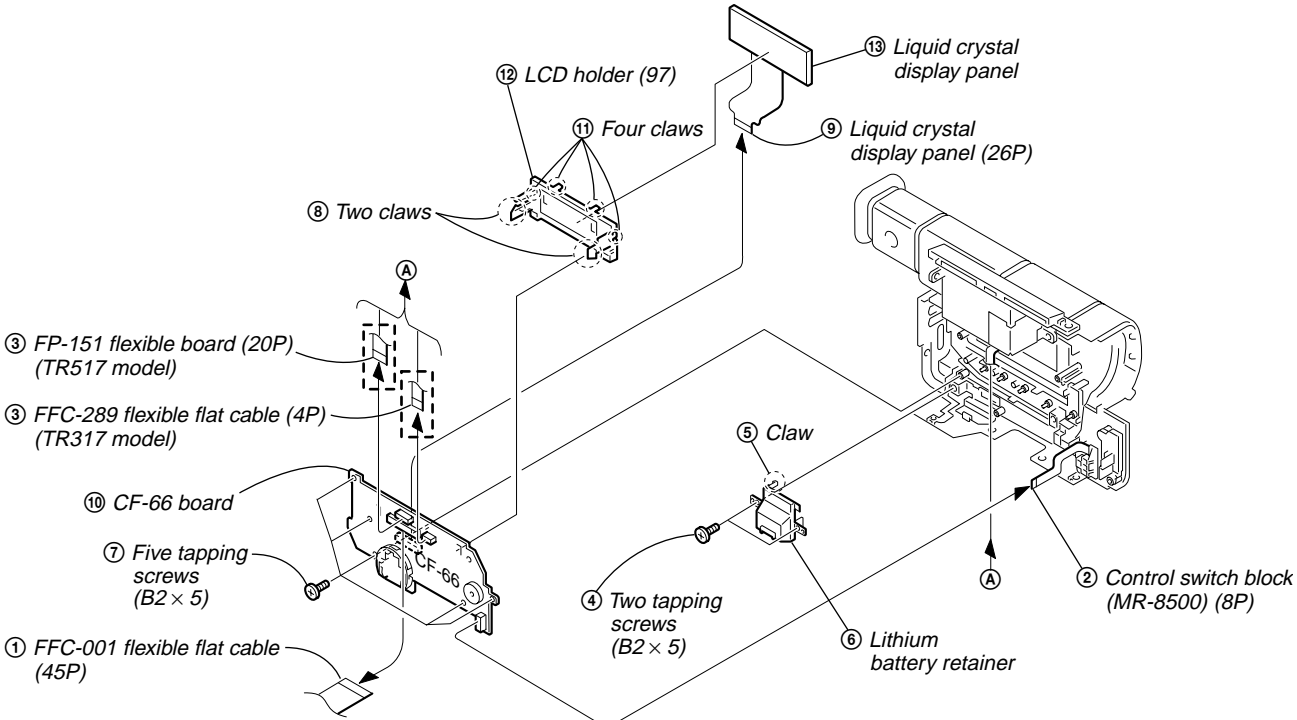
REMOVING THE MECHANISM DECK



**[CONNECTION DIAGRAM FOR SERVICE POSITION (Mainly for voltage measurement and check)]
 (MA-374/375, CF-66/67, CD-239/240, VL-29, PJ-99/100, SE-101, EJ-29/30, DD-134, VC-234 BOARDS,
 MECHANISM DECK-2**

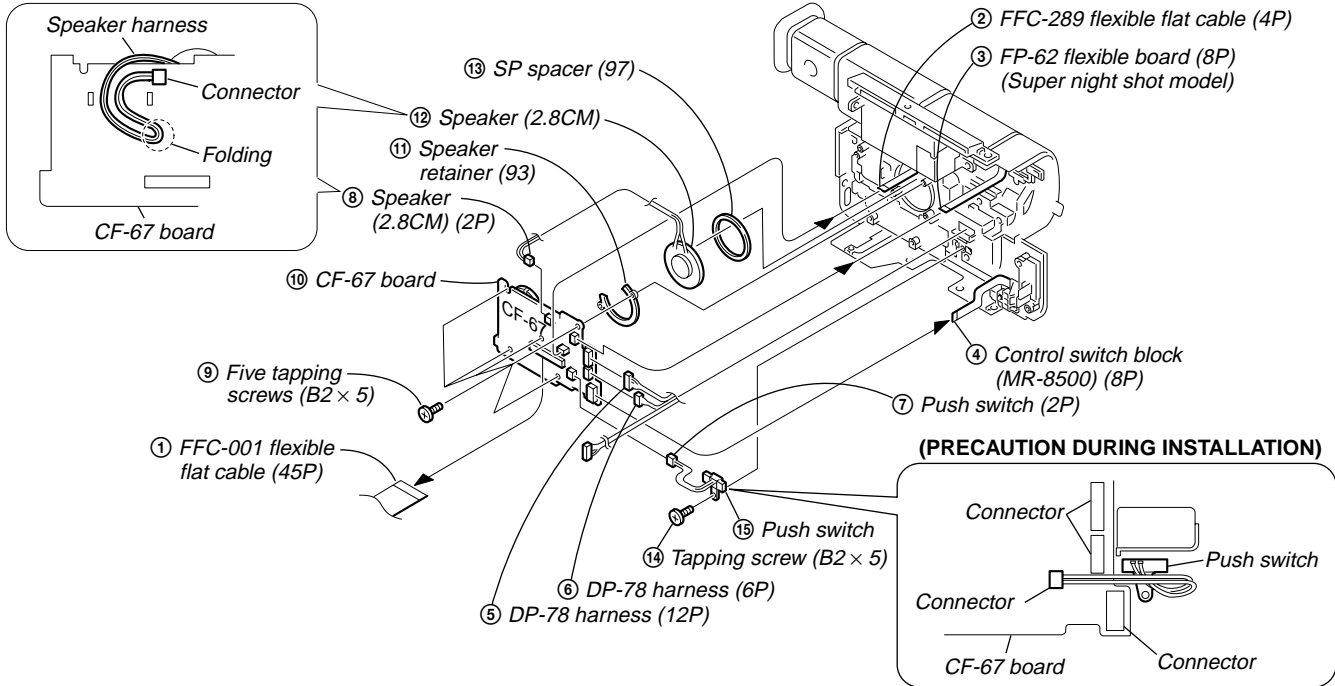


2-11.CF-66 BOARD, LIQUID CRYSTAL DISPLAY PANEL (TR MODEL)

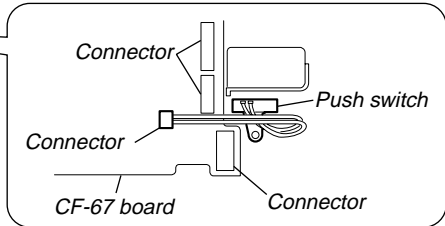


2-12. CF-67 BOARD, SPEAKER, PUSH SWITCH (TRV MODEL)

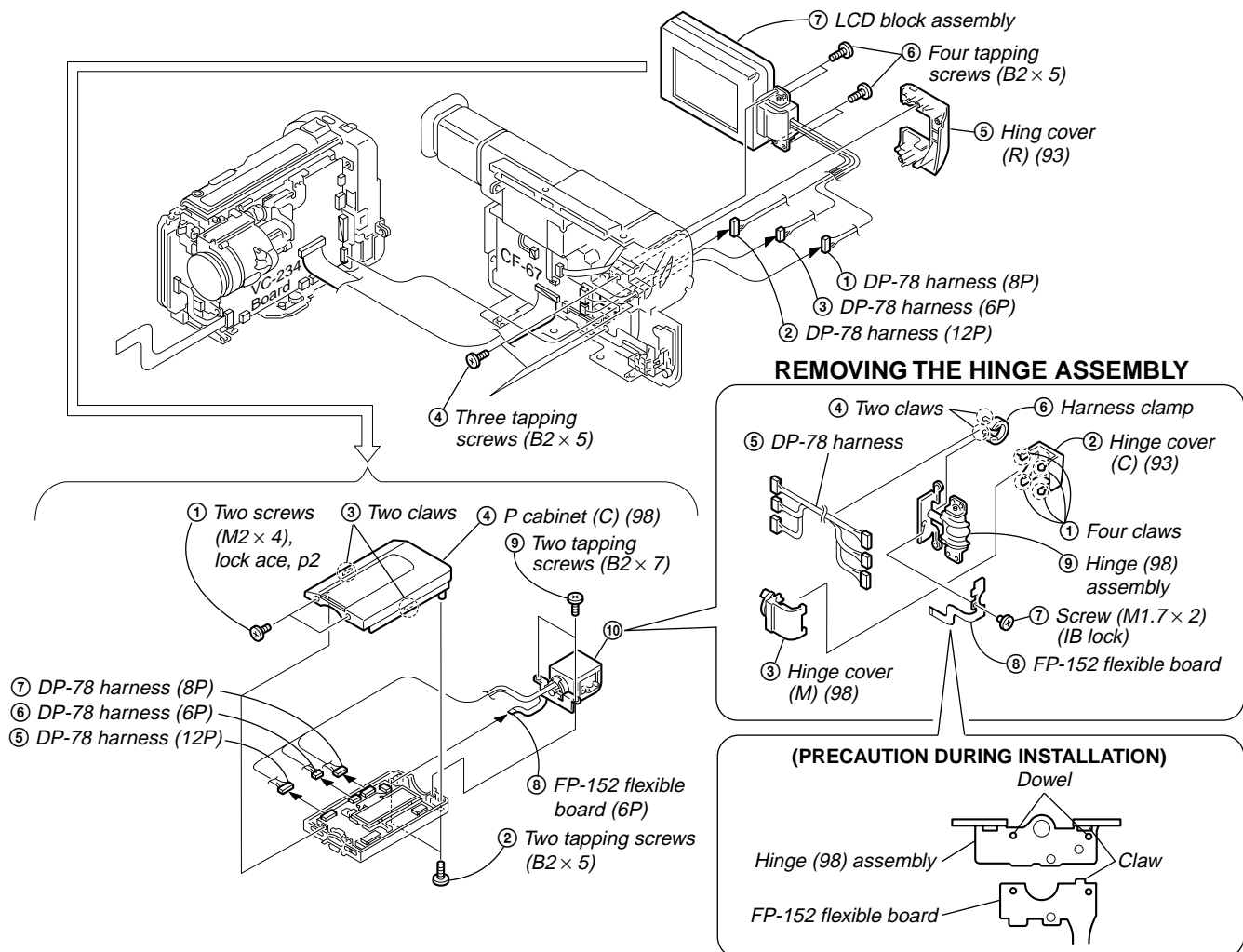
(PRECAUTION DURING INSTALLATION)



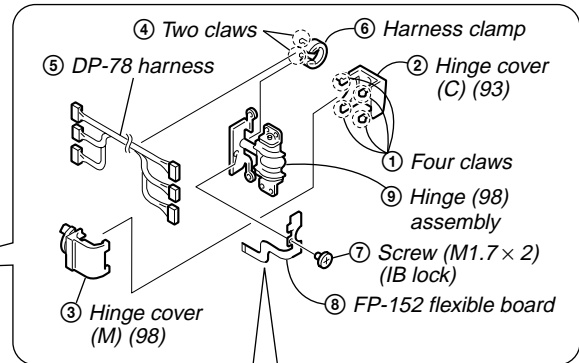
(PRECAUTION DURING INSTALLATION)



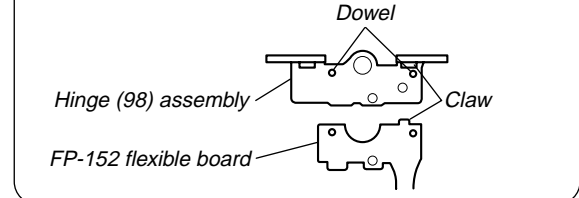
2-13. LCD BLOCK ASSEMBLY, HINGE ASSEMBLY (TRV MODEL)



REMOVING THE HINGE ASSEMBLY



(PRECAUTION DURING INSTALLATION)

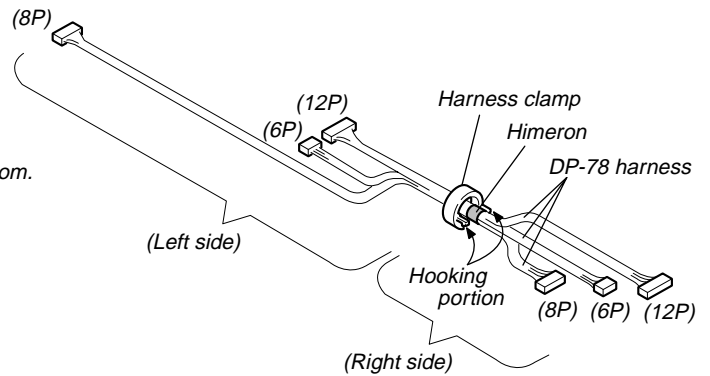


2-14.HARNES PROCESSING OF THE HINGE ASSEMBLY (TRV MODEL)

[ASSEMBLING THE HARNES CLAMP]

Attach the harness clamp to the DP-78 harness.

- Place a longer harness to the left side.
- Place the shortest harness (8P) in the right side to the bottom.
- Place the hooking portion of the harness clamp to the right side.
- Place the harness clamp in the left of the tie band himeron that ties the three wires.
- Insert the DP-78 harness in the internal groove of the harness clamp.

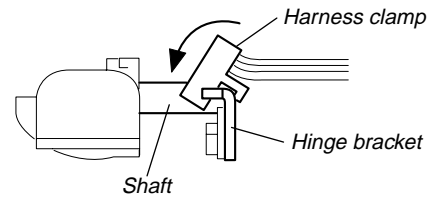


[INSTALLING THE HARNES CLAMP]

Hook the two claws of the harness clamp on the hinge bracket. Then attach it to the shaft of the hinge assembly.

Note:

- The harness must not be pinched.
- The sheet of the FP-152 flexible board must not be peeled over.



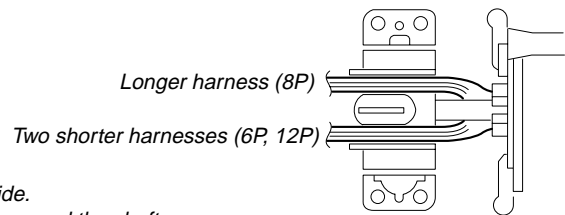
[HARNES PROCESSING]

Fix the harness using the harness guide of the hinge assembly.

- While holding the harness clamp, turn the hinge upside down.
- While being careful not to twist the harness, insert the longer harness (8P) into the shallow groove and insert the other harnesses (6P, 12P) to the deeper groove.

Note:

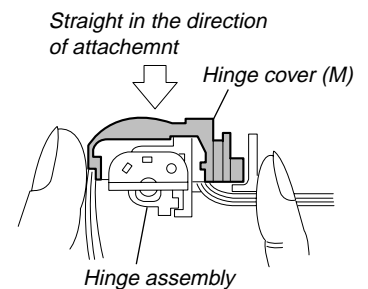
- Be sure that the harnesses do not climb over the three ribs of the guide.
- Be sure that the harnesses are not pinched between the harness clamp and the shaft.



[ATTACHING THE HINGE COVER (M)]

Attach the hinge cover (M) to the hinge assembly.

- Hold the harness so that the harness must not come out from the groove.
- Be careful so that the hinge cover (M) must not contact with the switch of the FP-152 flexible board.



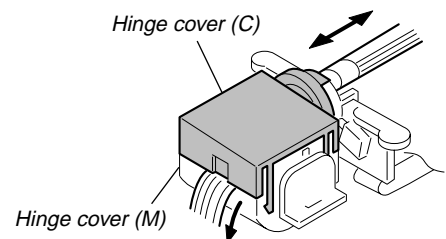
[ATTACHING THE HINGE COVER (C)]

Attach the hinge cover (C) to the hinge cover (M).

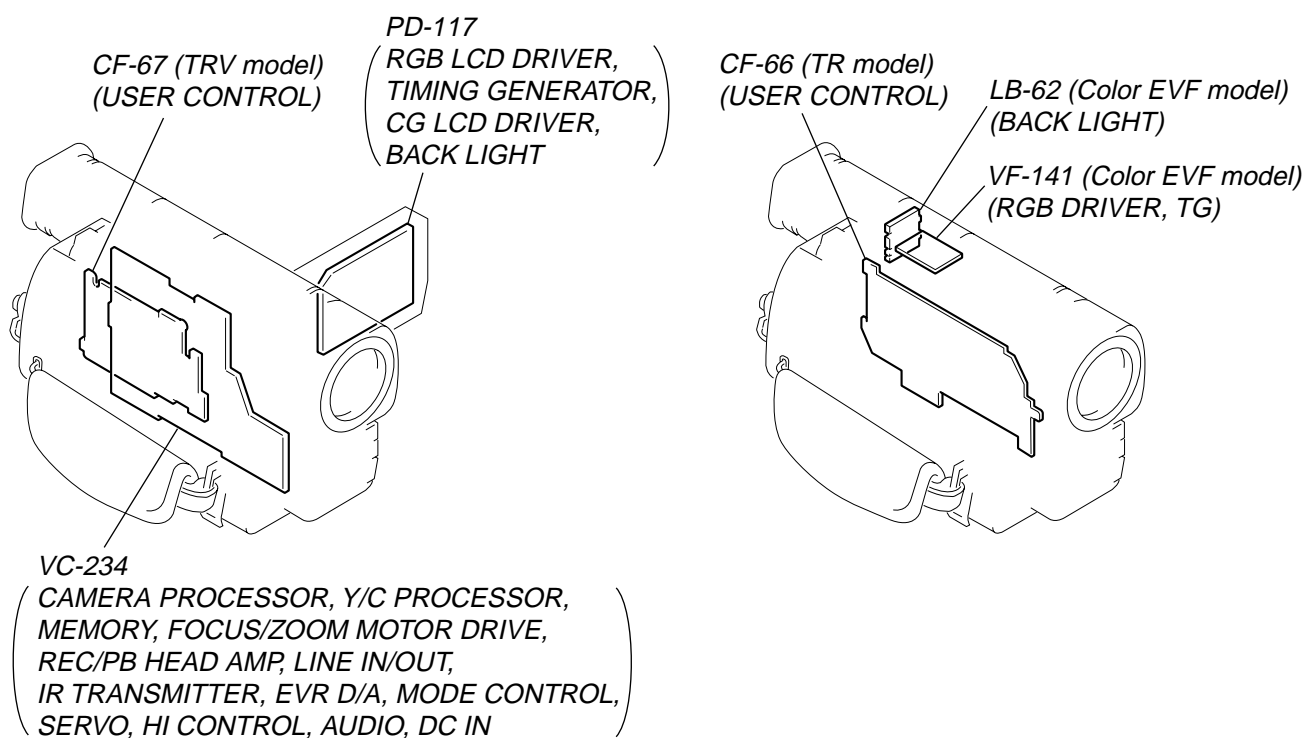
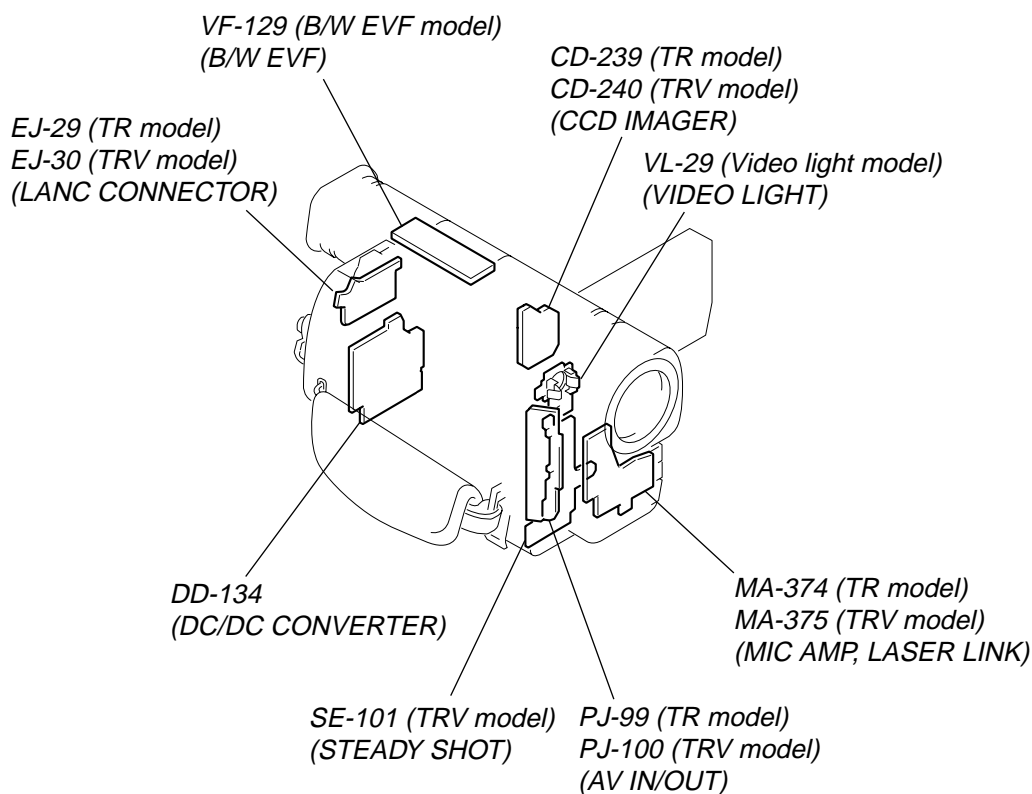
- While holding the hinge cover (M) so as not to be dropped, turn the hinge cover (C) upside down.
- Route the harness inside the cutout of the hinge cover (M).
- Attach the hinge cover (C) straight. (Claw hooks at the four positions.)
- Make an attempt to move the harness gently at the entrance/exit of the hinge assembly to make sure that the harness can move.

Note:

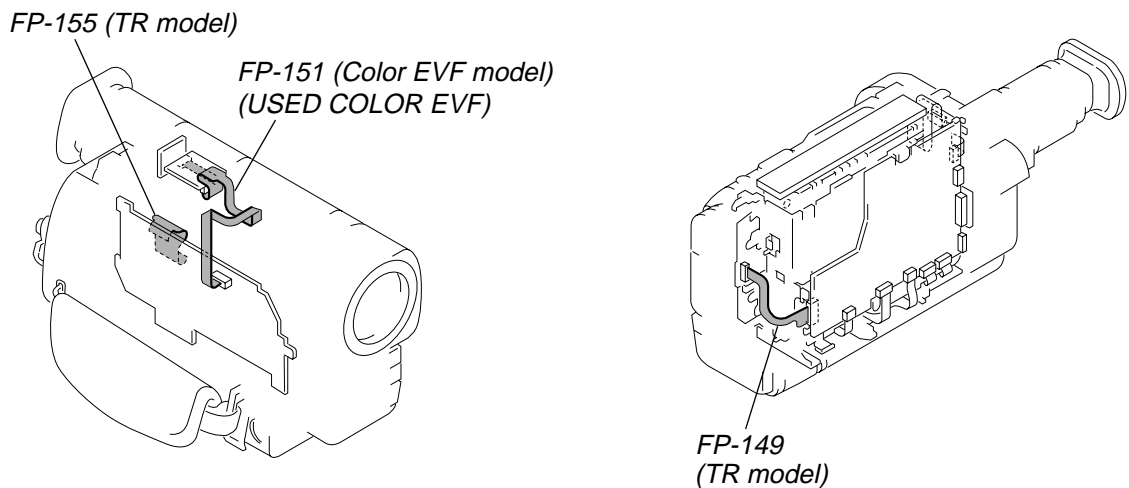
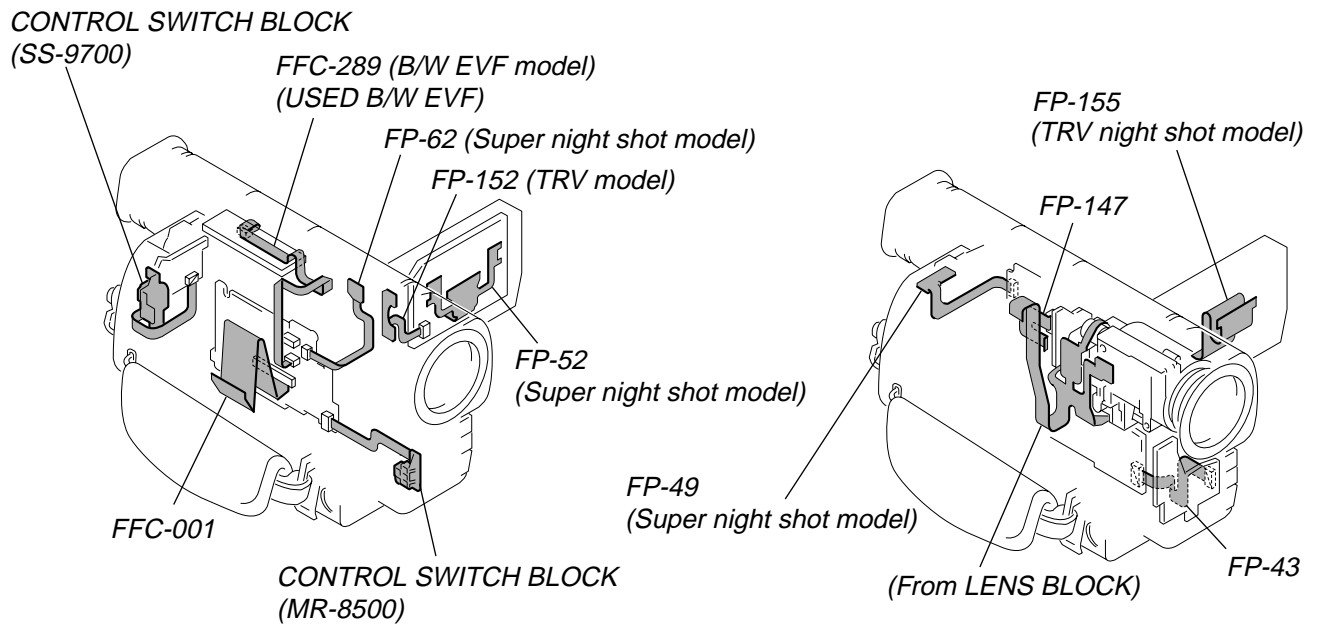
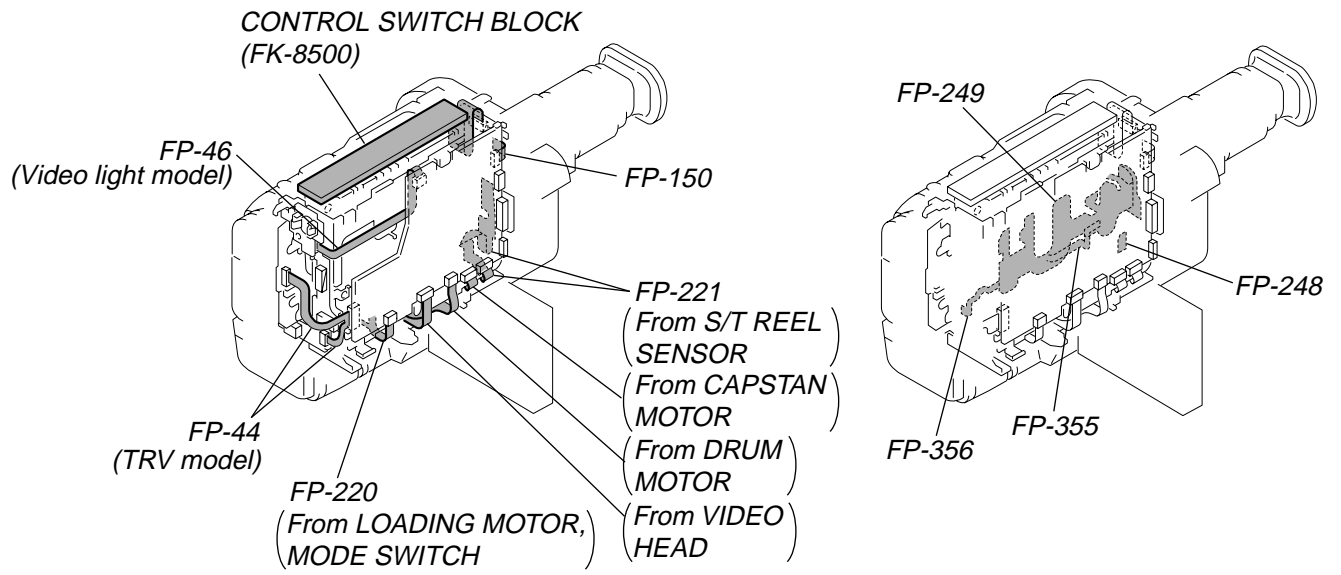
- Be sure that the harness is not pinched by the hinge cover.
- Be sure that the harness can move at the entrance/exit of the hinge assembly.



2-15. CIRCUIT BOARDS LOCATION



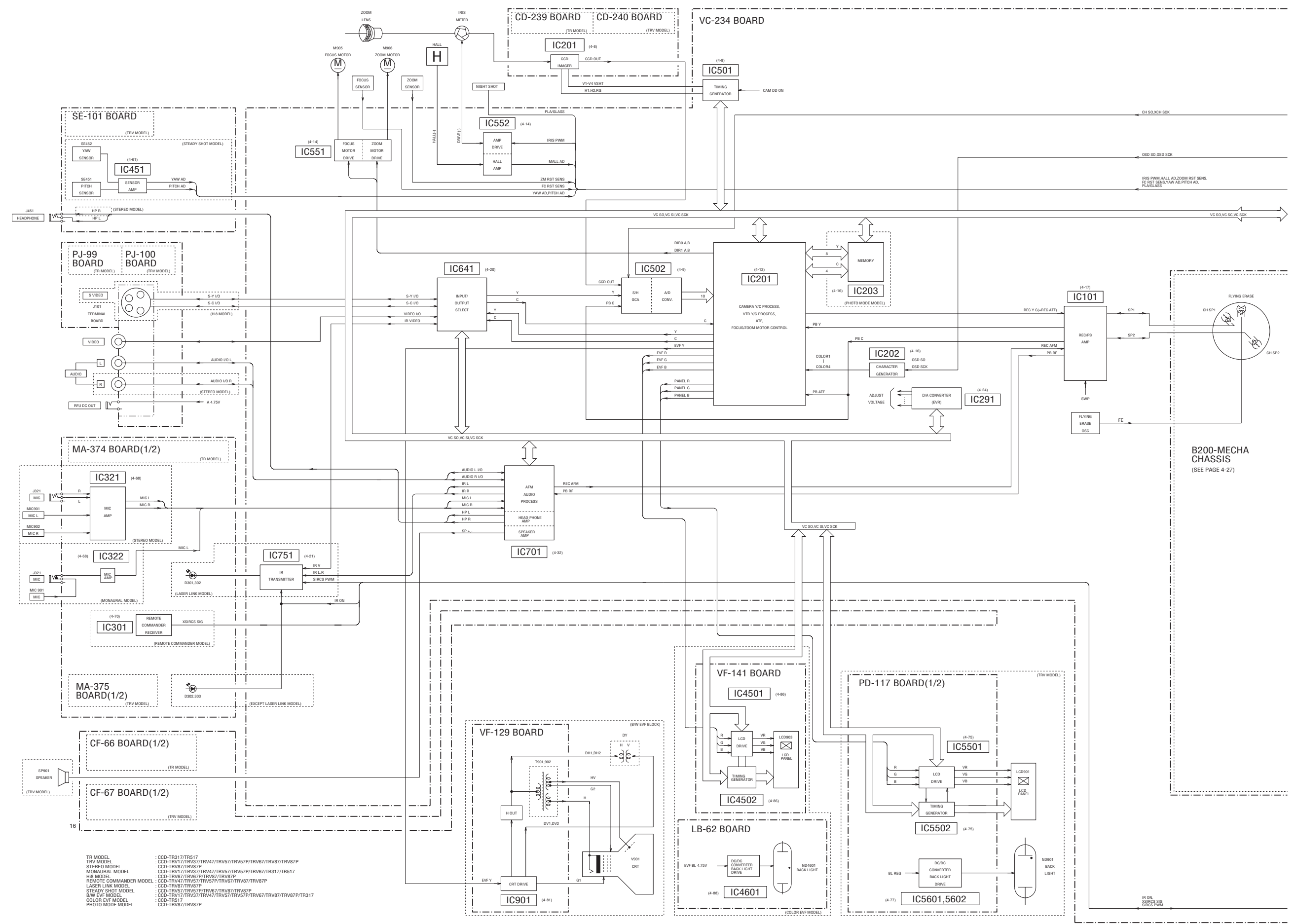
2-16. FLEXIBLE BOARDS LOCATION



CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

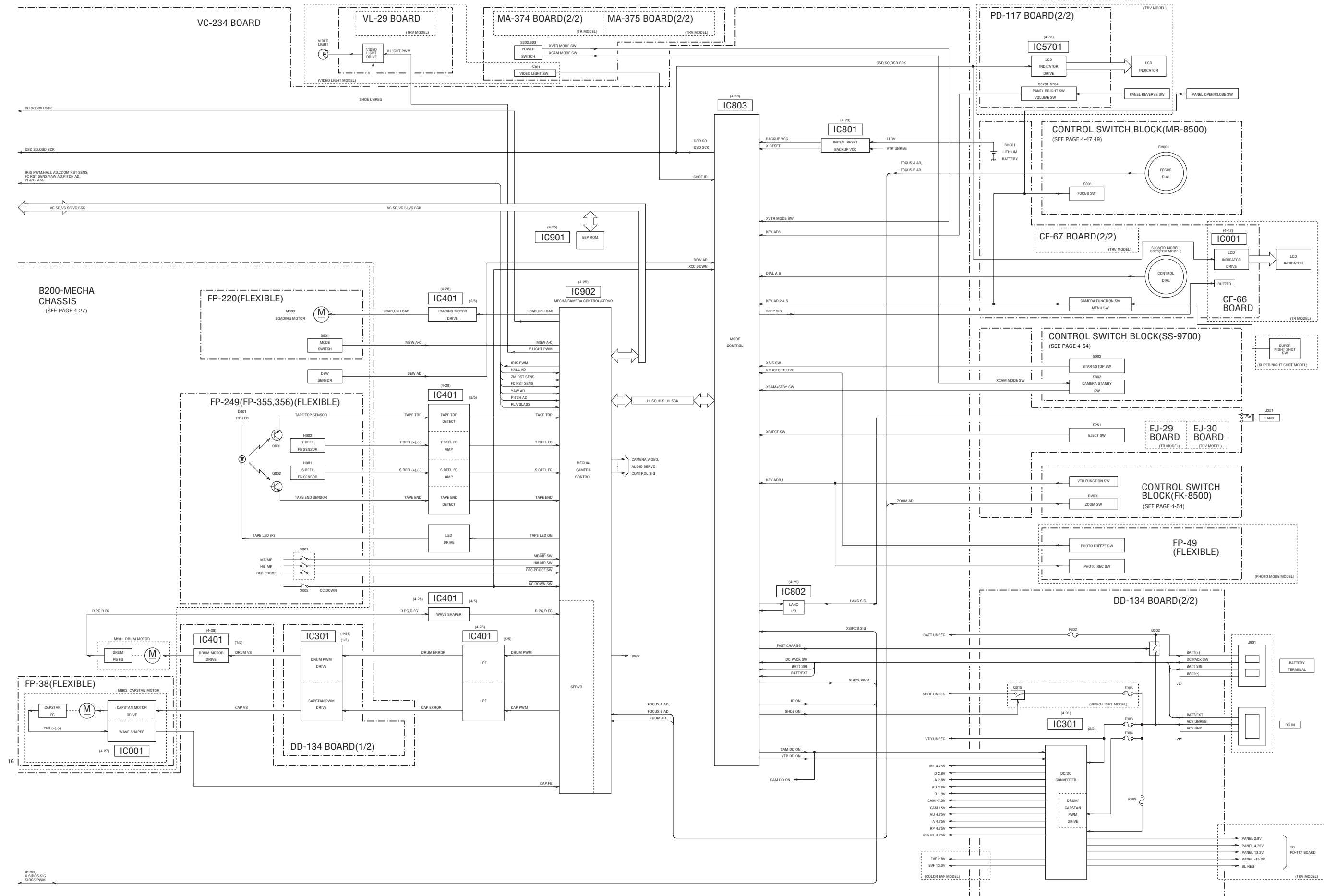
SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM (1/2) () : Page No. shown in () indicates the page to refer on the schematic diagram.



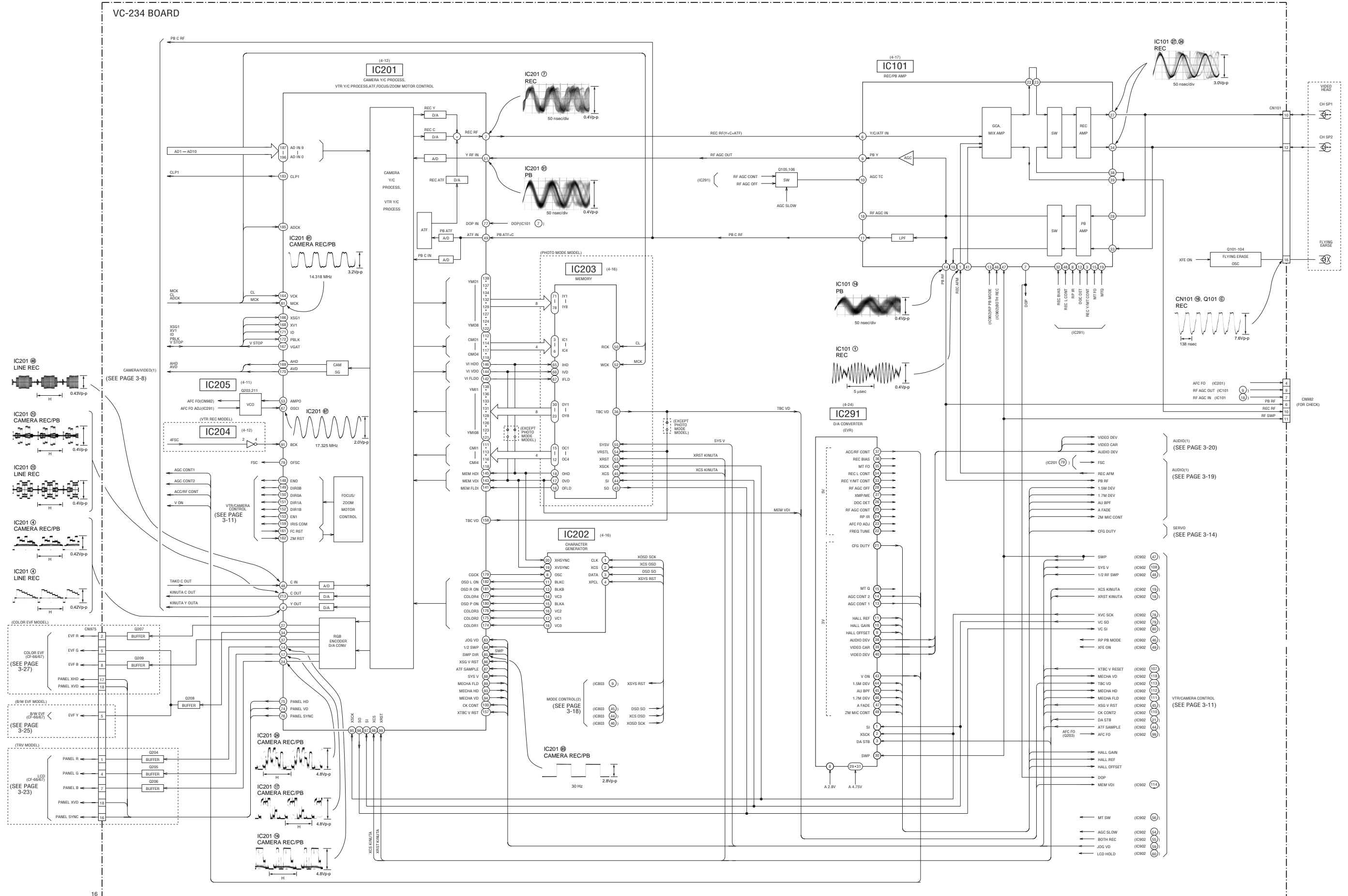
TR MODEL : CCD-TR317/TR517
 TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
 STEREO MODEL : CCD-TRV87/TRV87P
 MONAURAL MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
 LASER LINK MODEL : CCD-TRV67/TRV67P/TRV87/TRV87P
 REMOTE COMMANDER MODEL : CCD-TRV47/TRV57/TRV67/TRV87/TRV87P
 STEADY SHOT MODEL : CCD-TRV57/TRV57P/TRV67/TRV87/TRV87P
 B/W EVF MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
 COLOR EVF MODEL : CCD-TR317
 PHOTO MODE MODEL : CCD-TRV87/TRV87P

3-2. OVERALL BLOCK DIAGRAM (2/2) () : Page No. shown in () indicates the page to refer on the schematic diagram.



3-4. CAMERA/VIDEO BLOCK DIAGRAM (2/2)

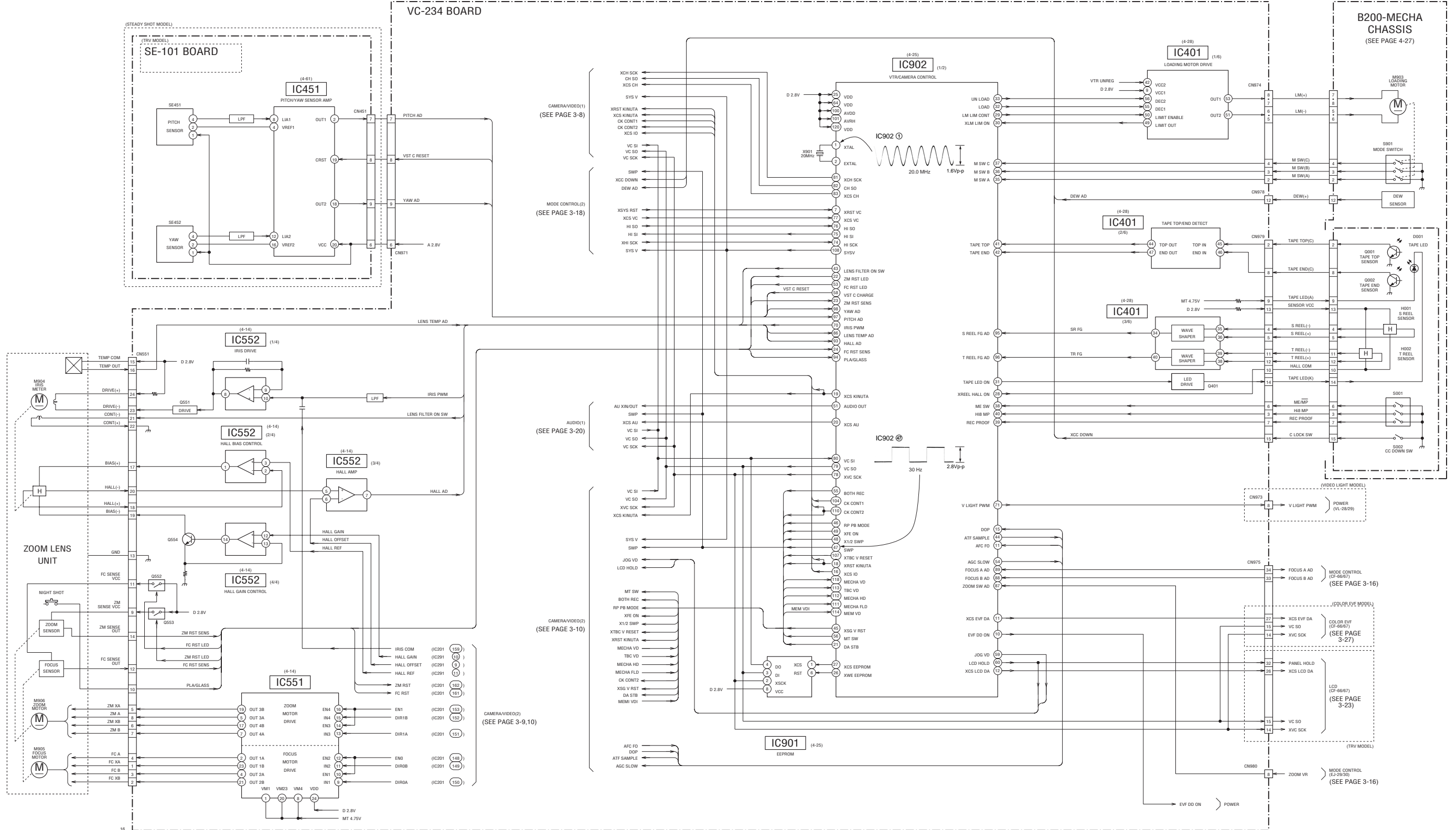
() : Page No. shown in () indicates the page to refer on the schematic diagram.



TR MODEL : CCD-TR317/TR517
TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
VTR REC MODEL : CCD-TRV57/TRV57P
B/W EVF MODEL : CCD-TRV17/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P/TR317
COLOR EVF MODEL : CCD-TR517
PHOTO MODE MODEL : CCD-TRV57/TRV87P

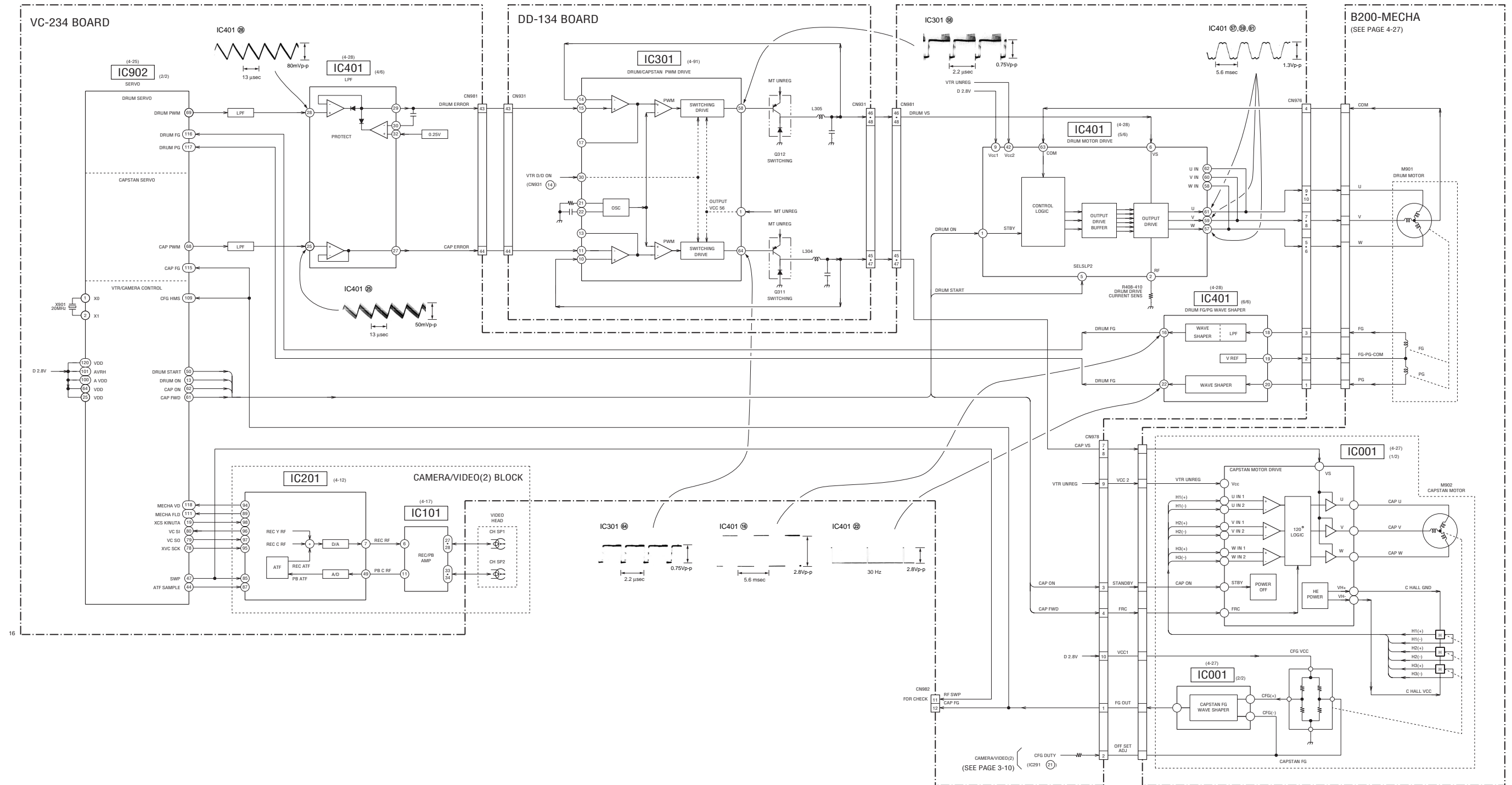
3-5. VTR/CAMERA CONTROL BLOCK DIAGRAM

() : Page No. shown in () indicates the page to refer on the schematic diagram.



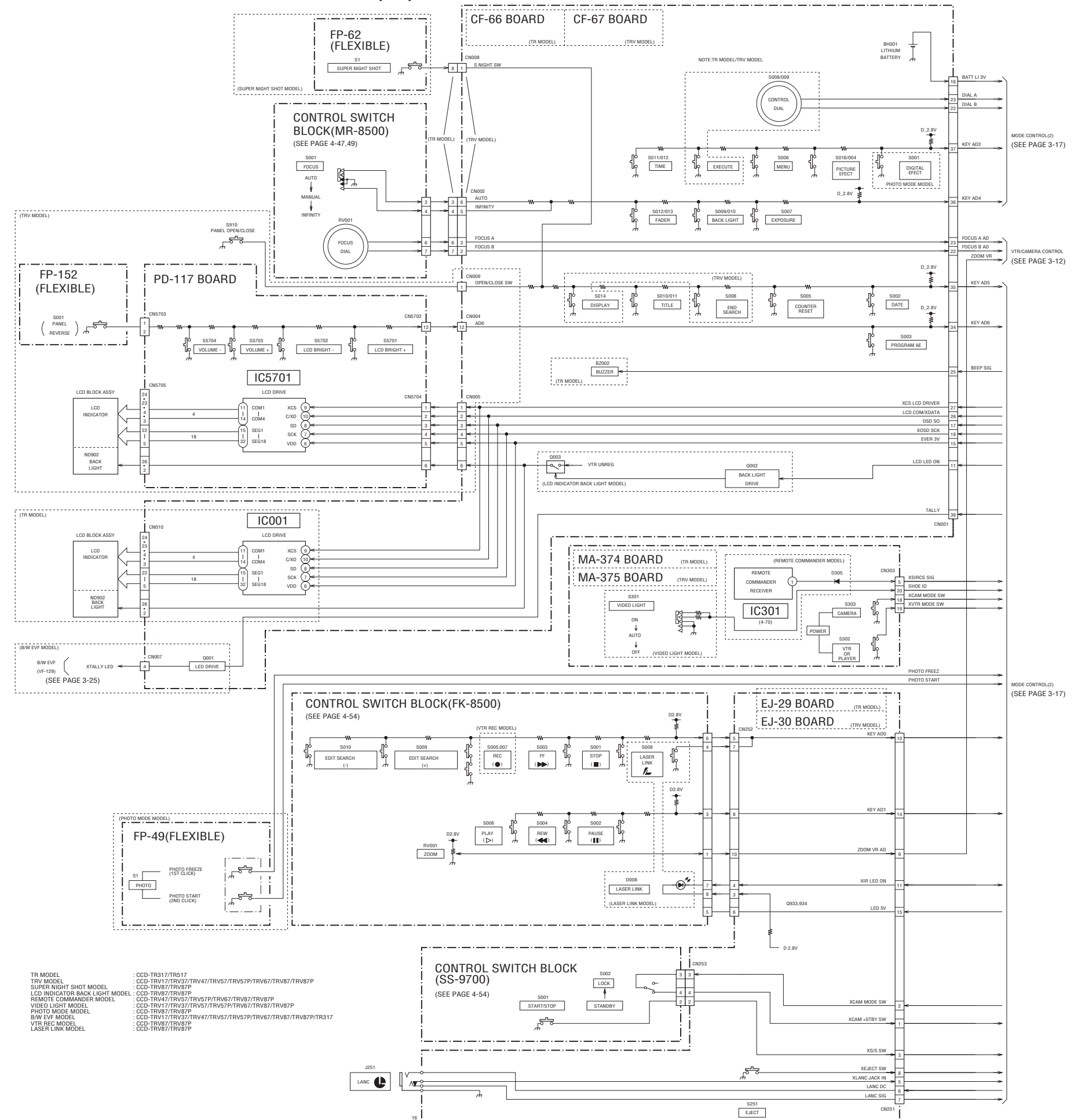
TR MODEL : CCD-TR317/TR517
TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
STEADY SHOT MODEL : CCD-TRV57/TRV57P/TRV67/TRV87P
VIDEO LIGHT MODEL : CCD-TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P
COLOR EVF MODEL : CCD-TR517

3-6. SERVO BLOCK DIAGRAM () : Page No. shown in () indicates the page to refer on the schematic diagram.



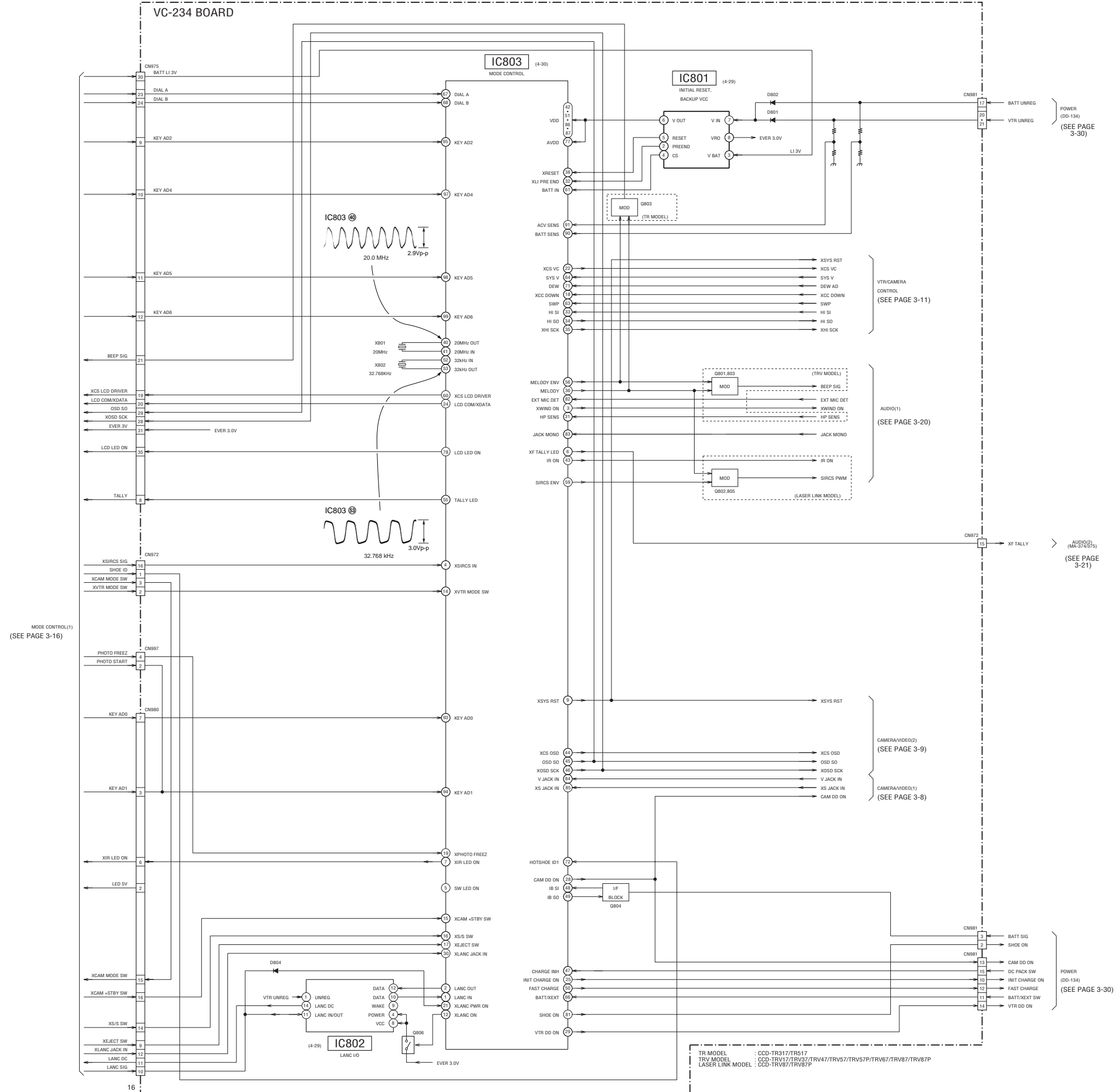
3-7. MODE CONTROL BLOCK DIAGRAM (1/2)

() : Page No. shown in () indicates the page to refer on the schematic diagram.

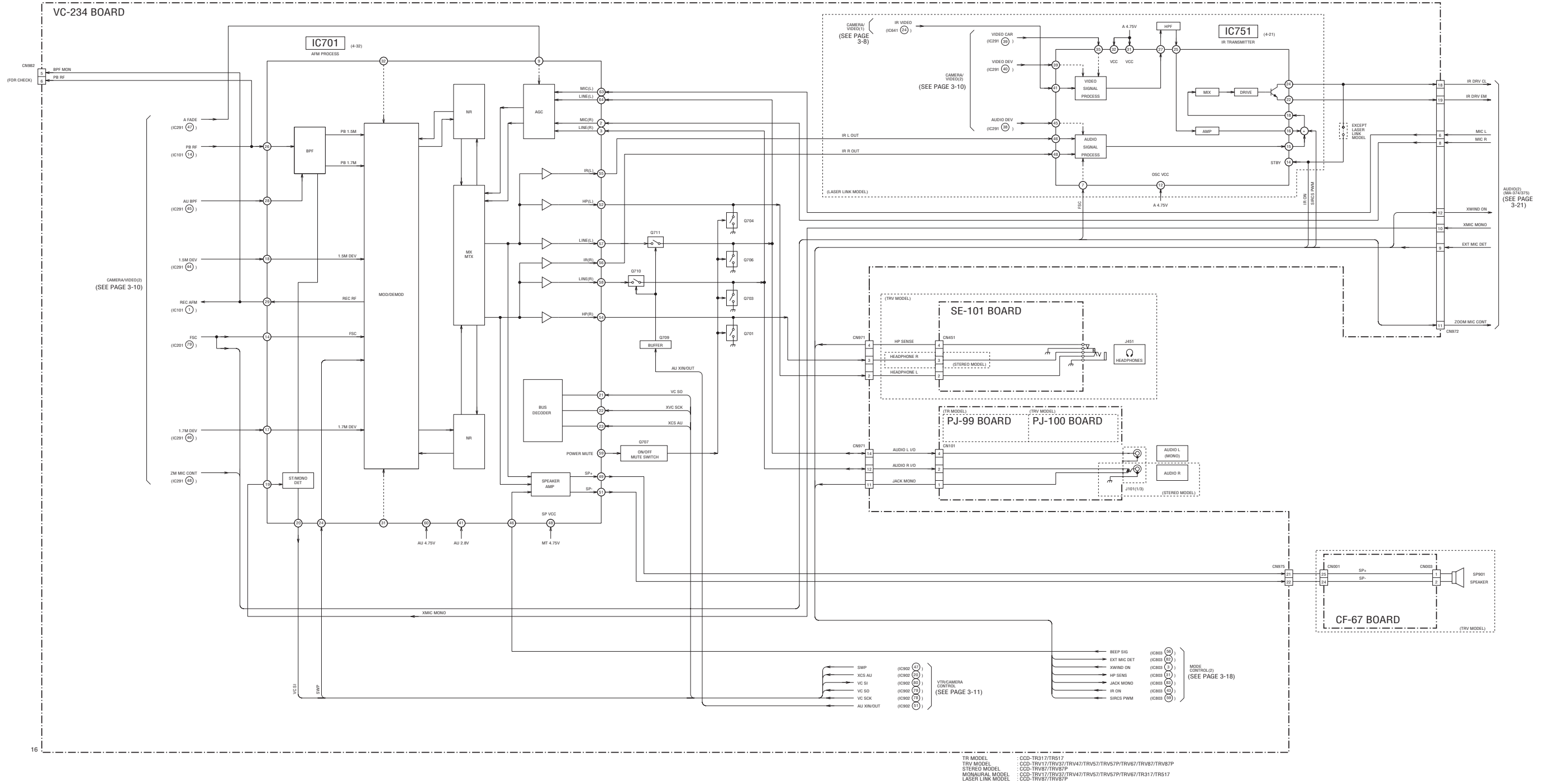


3-8. MODE CONTROL BLOCK DIAGRAM (2/2)

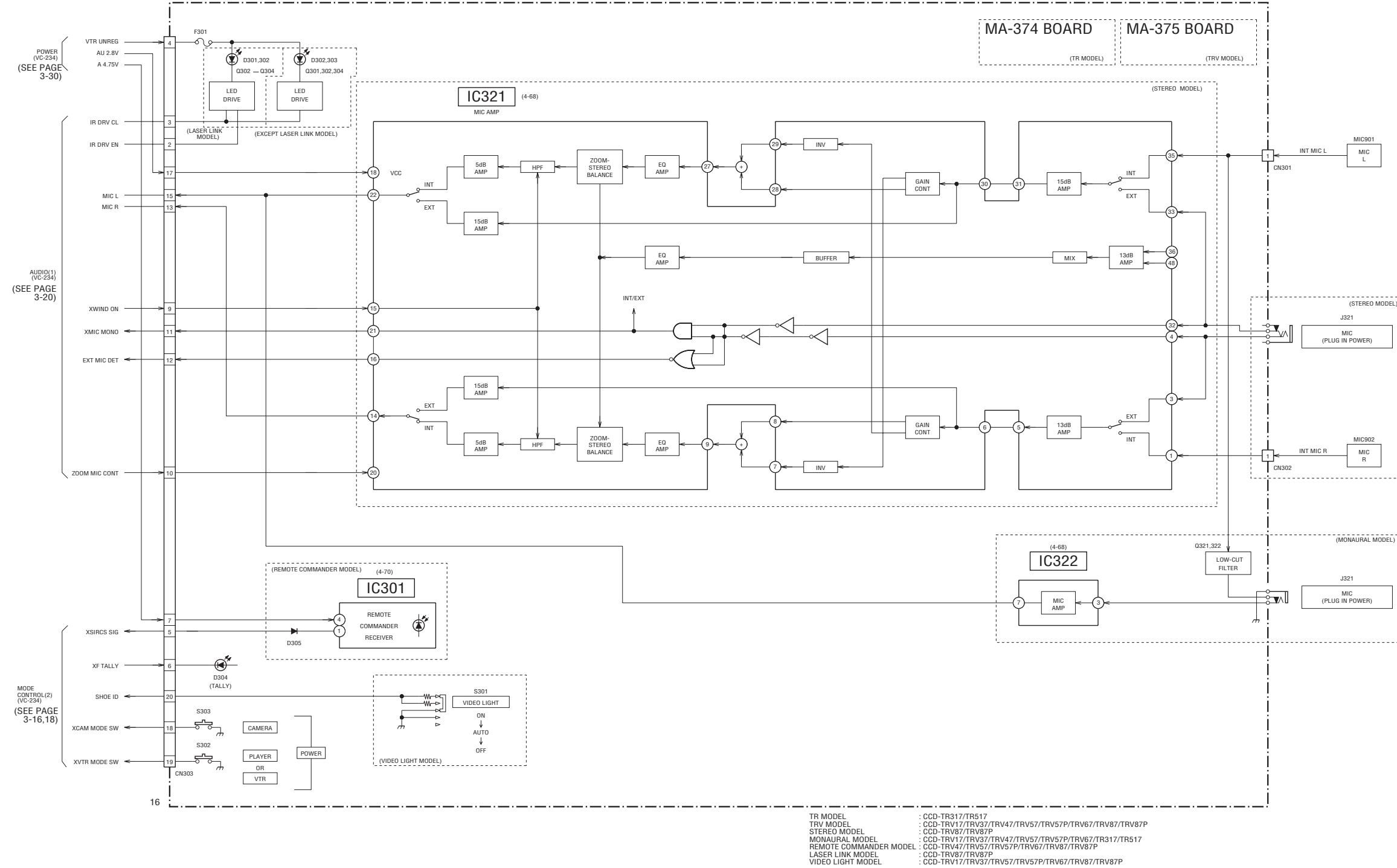
() : Page No. shown in () indicates the page to refer on the schematic diagram.



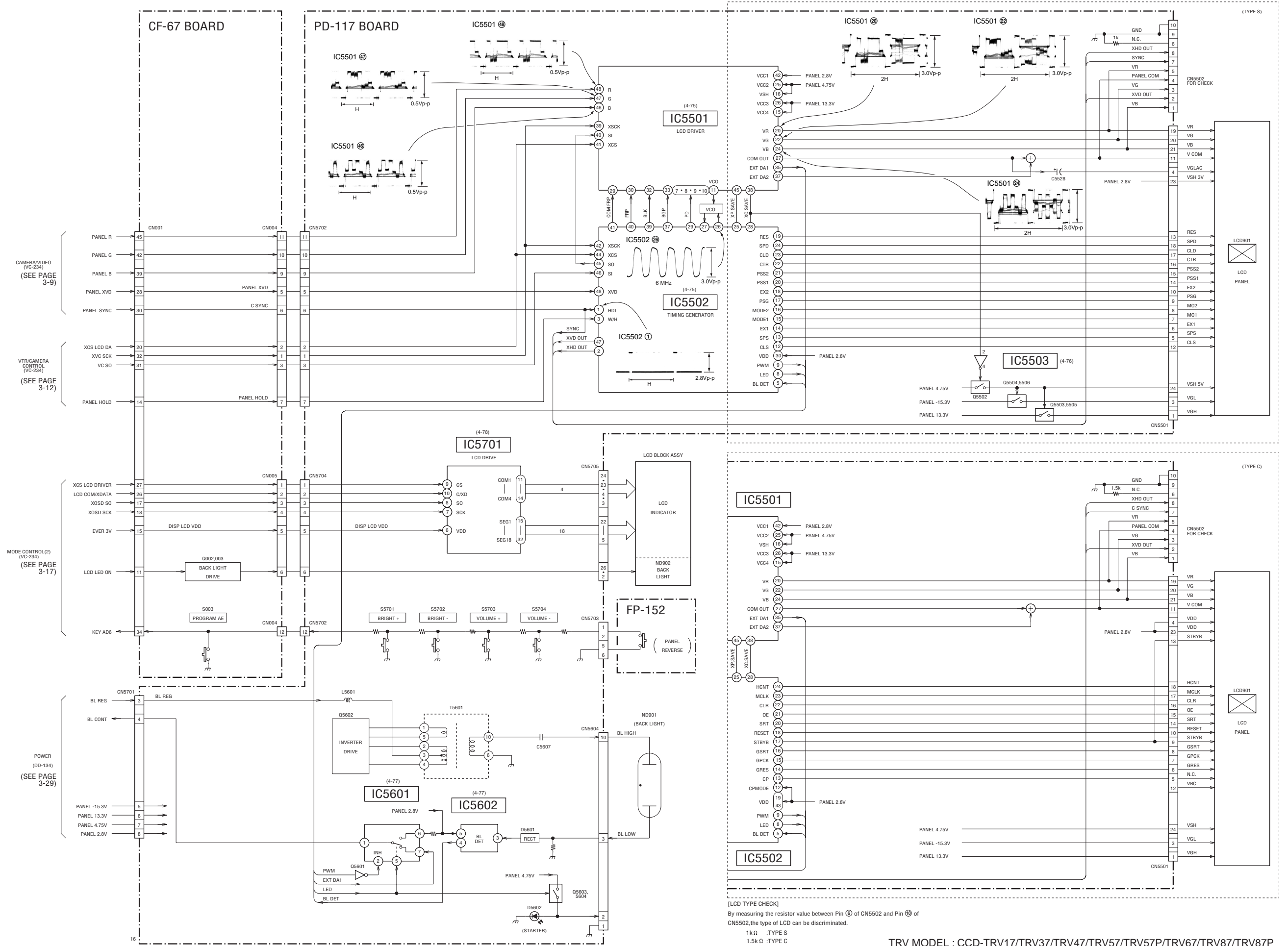
3-9. AUDIO BLOCK DIAGRAM (1/2) () : Page No. shown in () indicates the page to refer on the schematic diagram.



3-10. AUDIO BLOCK DIAGRAM (2/2) () : Page No. shown in () indicates the page to refer on the schematic diagram.

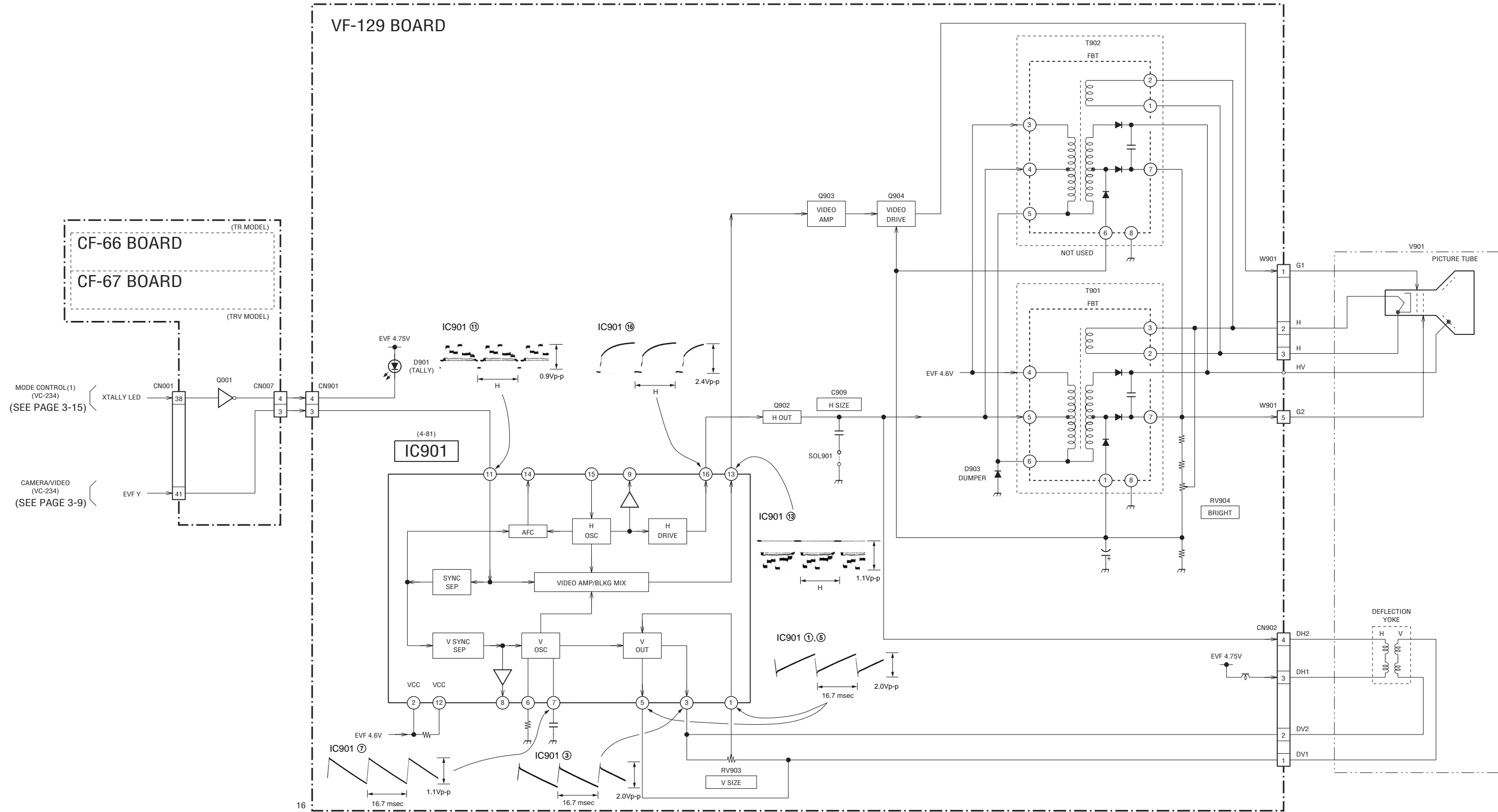


3-11. LCD BLOCK DIAGRAM (TRV MODEL) () : Page No. shown in () indicates the page to refer on the schematic diagram.



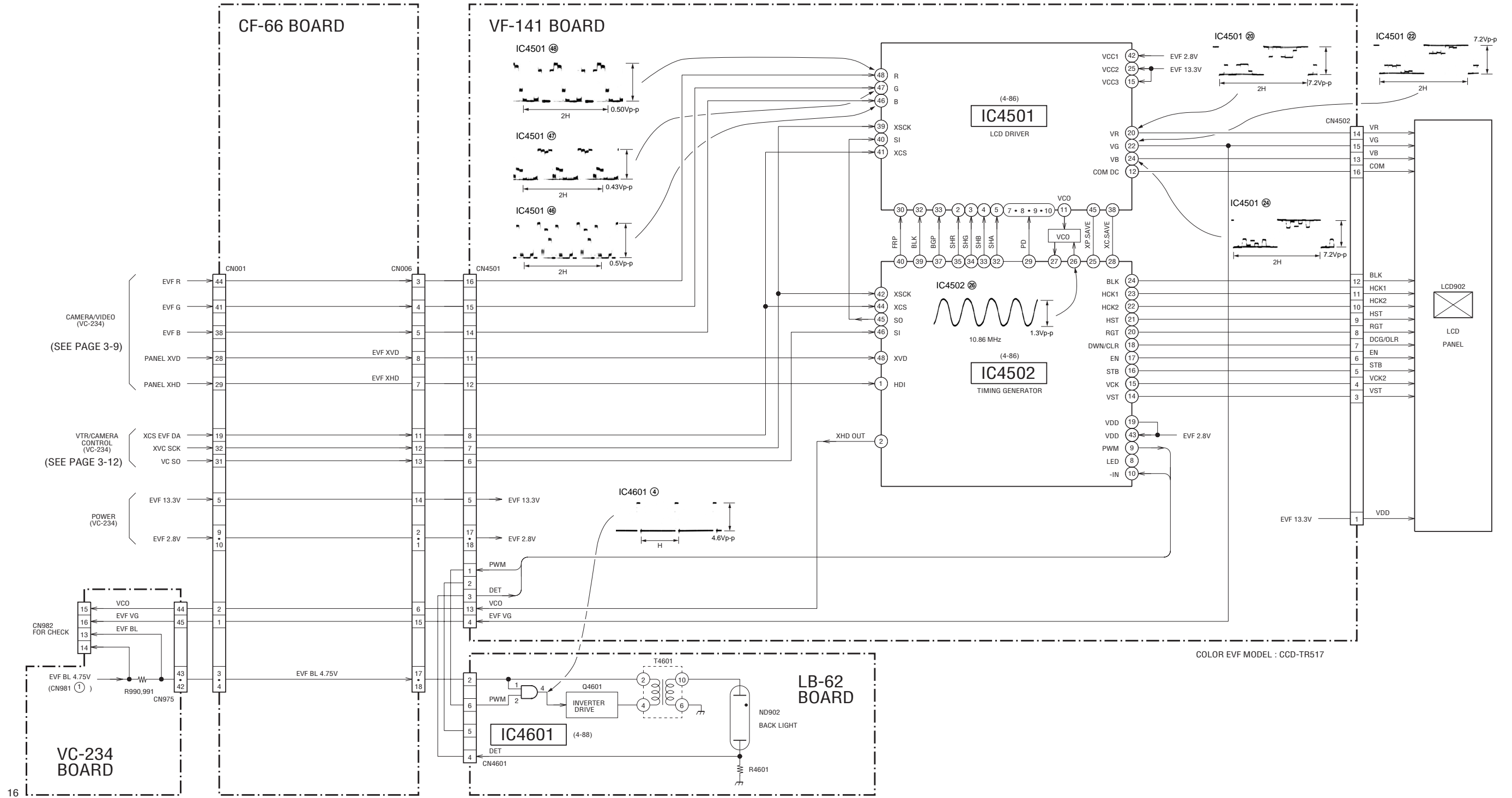
3-12. B/W EVF BLOCK DIAGRAM

() : Page No. shown in () indicates the page to refer on the schematic diagram.



TR MODEL : CCD-TR317
TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P

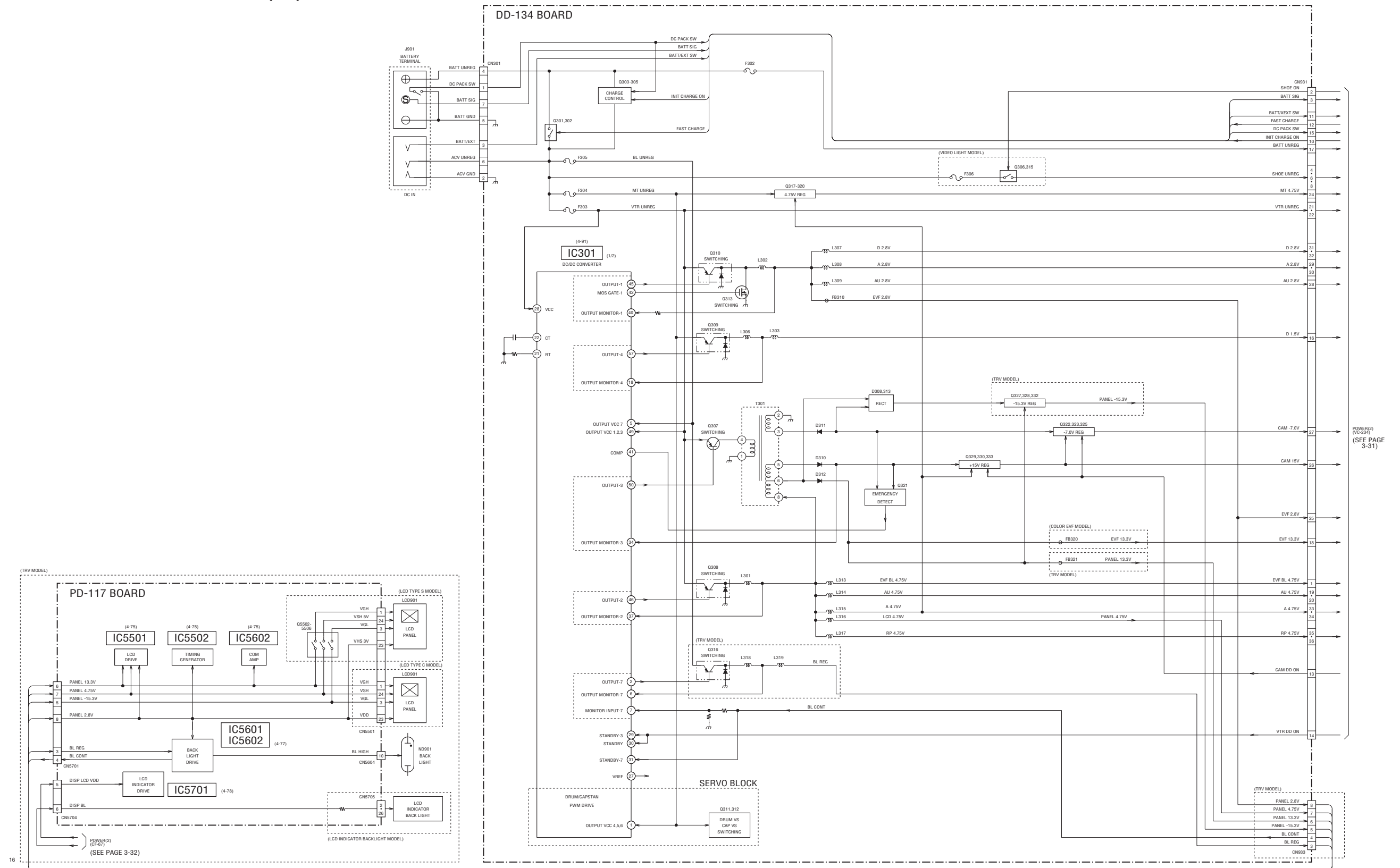
3-13. COLOR EVF BLOCK DIAGRAM () : Page No. shown in () indicates the page to refer on the schematic diagram.



16

3-14. POWER BLOCK DIAGRAM (1/2)

() : Page No. shown in () indicates the page to refer on the schematic diagram.

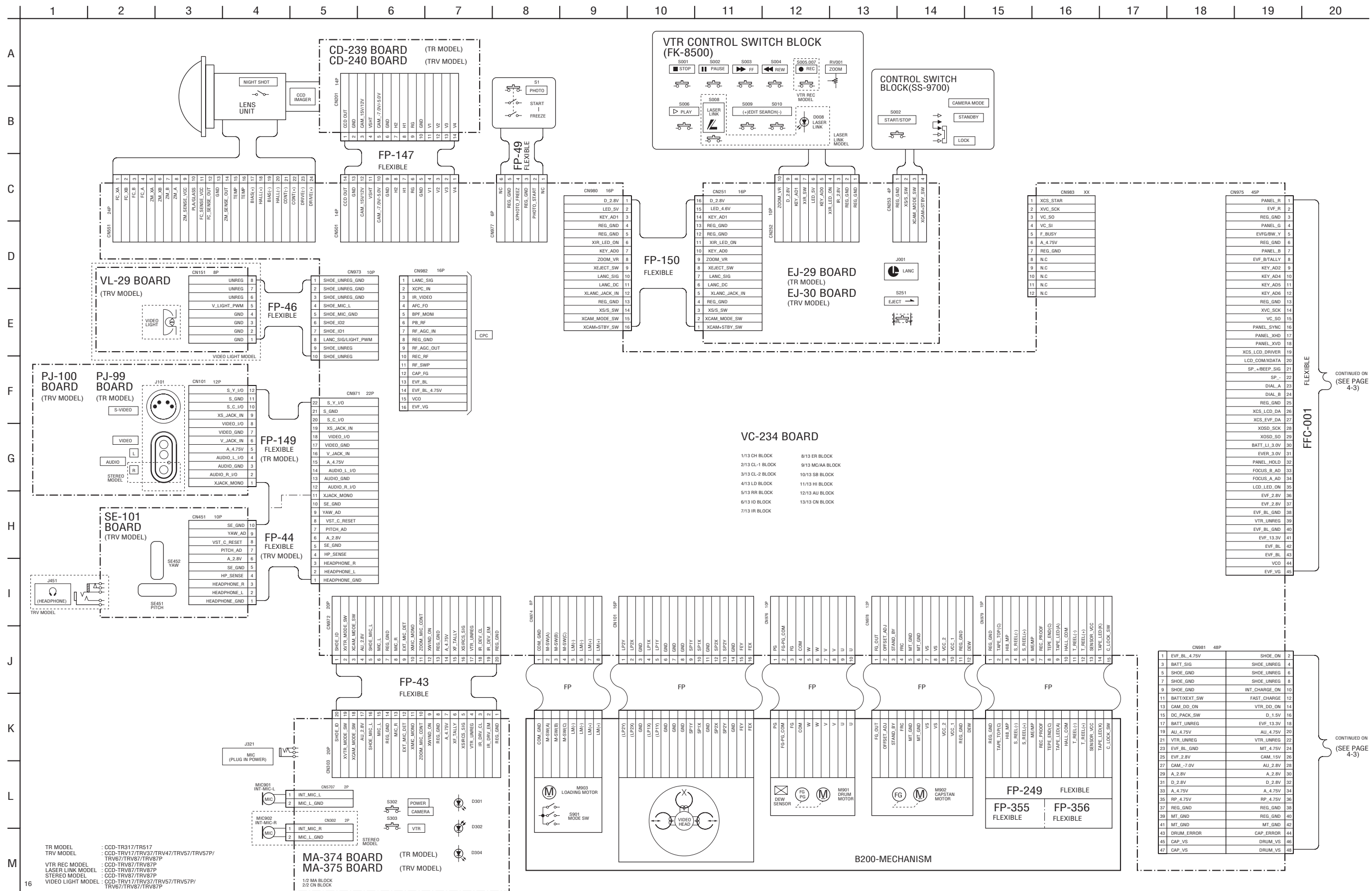


[LCD TYPE CHECK]
By measuring the resistor value between Pin ⑥ of CN5502 and Pin ⑩ of CN5502, the type of LCD can be discriminated.
1k Ω :TYPE S
1.5k Ω :TYPE C

TR MODEL : CCD-TR317/TR517
TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
LCD TYPE S MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
LCD TYPE C MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
LCD INDICATOR BACK LIGHT MODEL : CCD-TRV17/TRV37/TRV57/TRV67/TRV87/TRV87P
COLOR EVF MODEL : CCD-TR517

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM (1/2)



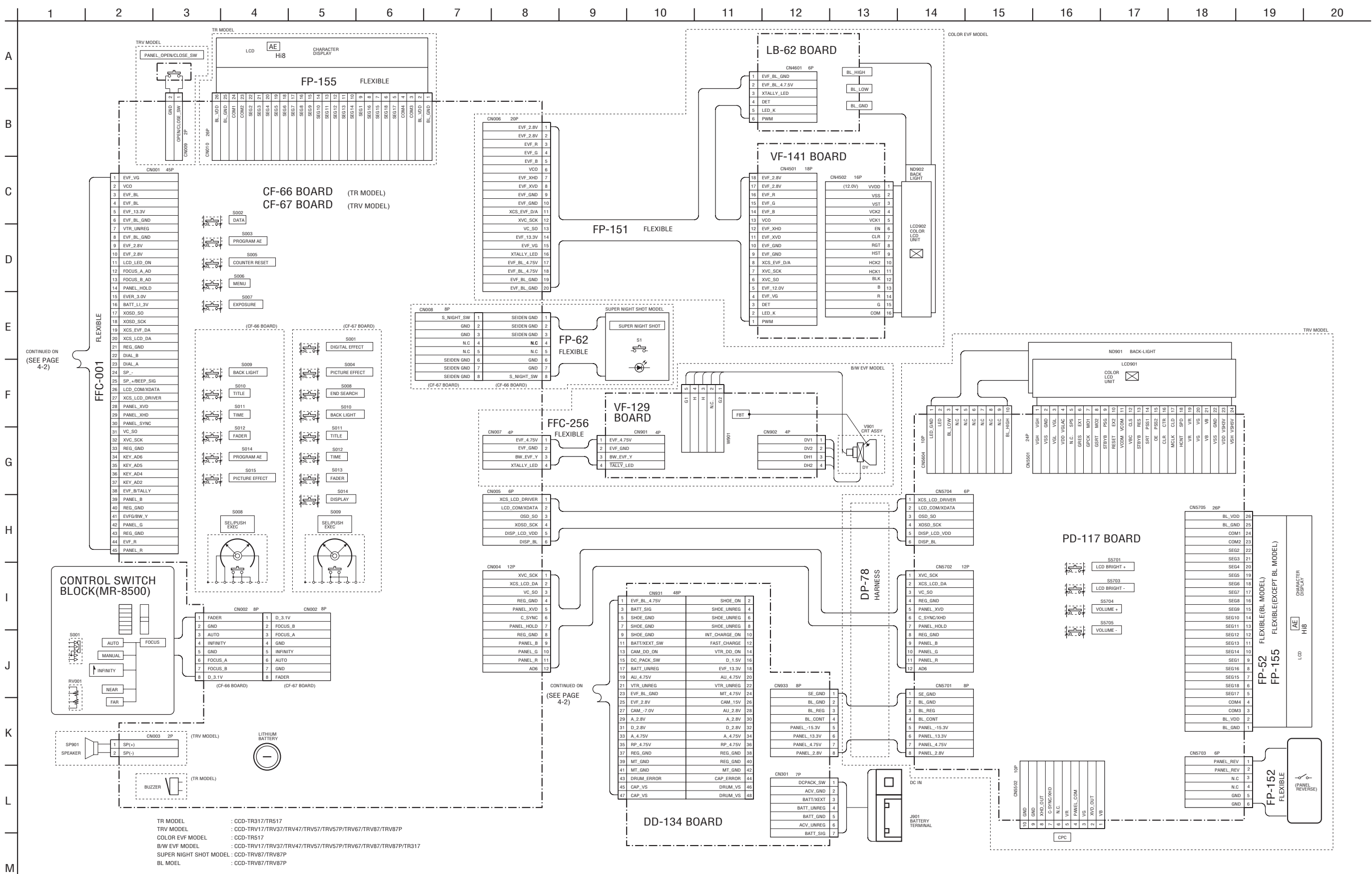
TR MODEL : CCD-TR317/TR517
TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P
VTR REC MODEL : CCD-TRV87/TRV87P
LASER LINK MODEL : CCD-TRV87/TRV87P
STEREO MODEL : CCD-TRV87/TRV87P
VIDEO LIGHT MODEL : CCD-TRV17/TRV37/TRV57/TRV57P/
TRV67/TRV87/TRV87P

1/2 MA BLOCK
2/2 CN BLOCK

CONTINUED ON
(SEE PAGE
4-3)

CONTINUED ON
(SEE PAGE
4-3)

FRAME SCHEMATIC DIAGRAM (2/2)



CONTINUED ON
(SEE PAGE
4-2)

CONTINUED ON
(SEE PAGE
4-2)

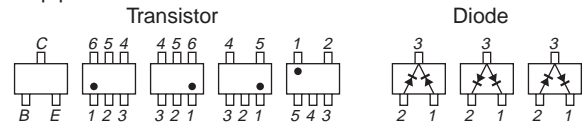
TR MODEL : CCD-TR317/TR517
TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
COLOR EVF MODEL : CCD-TR517
B/W EVF MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P/TR317
SUPER NIGHT SHOT MODEL : CCD-TRV87/TRV87P
BL MOEL : CCD-TRV87/TRV87P

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR WIRING BOARDS AND SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

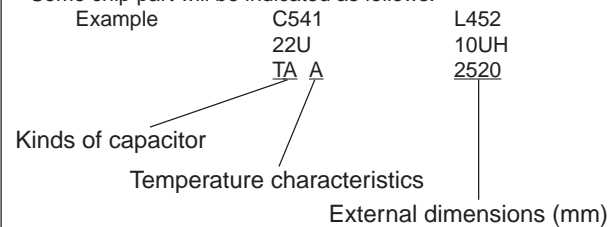
- Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.



- Model
TR model: CCD-TR317/TR517
TRV model: CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P

(For schematic diagrams)

- All capacitors are in mF unless otherwise noted. pF : m mF. 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10W unless otherwise noted.
kW=1000W, MW=1000kW.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.



- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
In such cases, the unused circuits may be indicated.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
XEDIT → EDIT PB/XREC → PB/REC
- non flammable resistor
- fusible resistor
- panel designation
- B+ Line *
- B- Line *
- IN/OUT direction of (+,-) B LINE. *
- adjustment for repair. *
- Circled numbers refer to waveforms. *
- * Indicated by the color red.

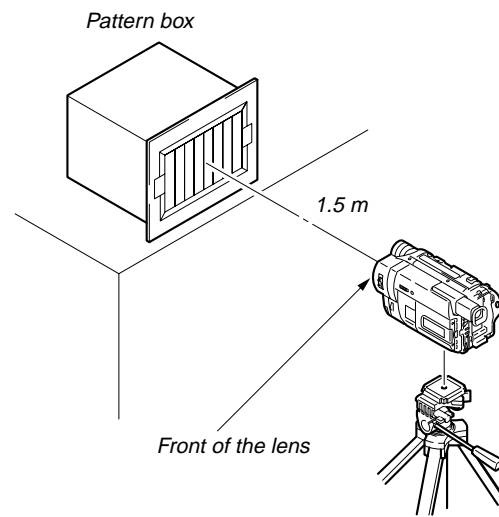
Note :
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note :
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms. *
- (VOM of DC 10 M Ω input impedance is used.)
- Voltage values change depending upon input impedance of VOM used.) *

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

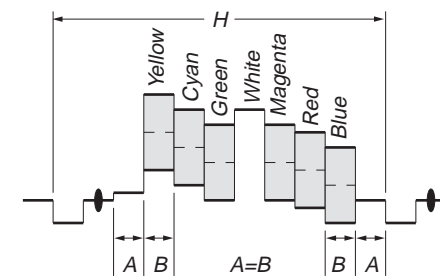


Fig. a (Video output terminal output waveform)

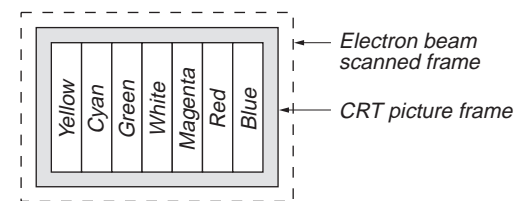


Fig. b (Picture on monitor TV)

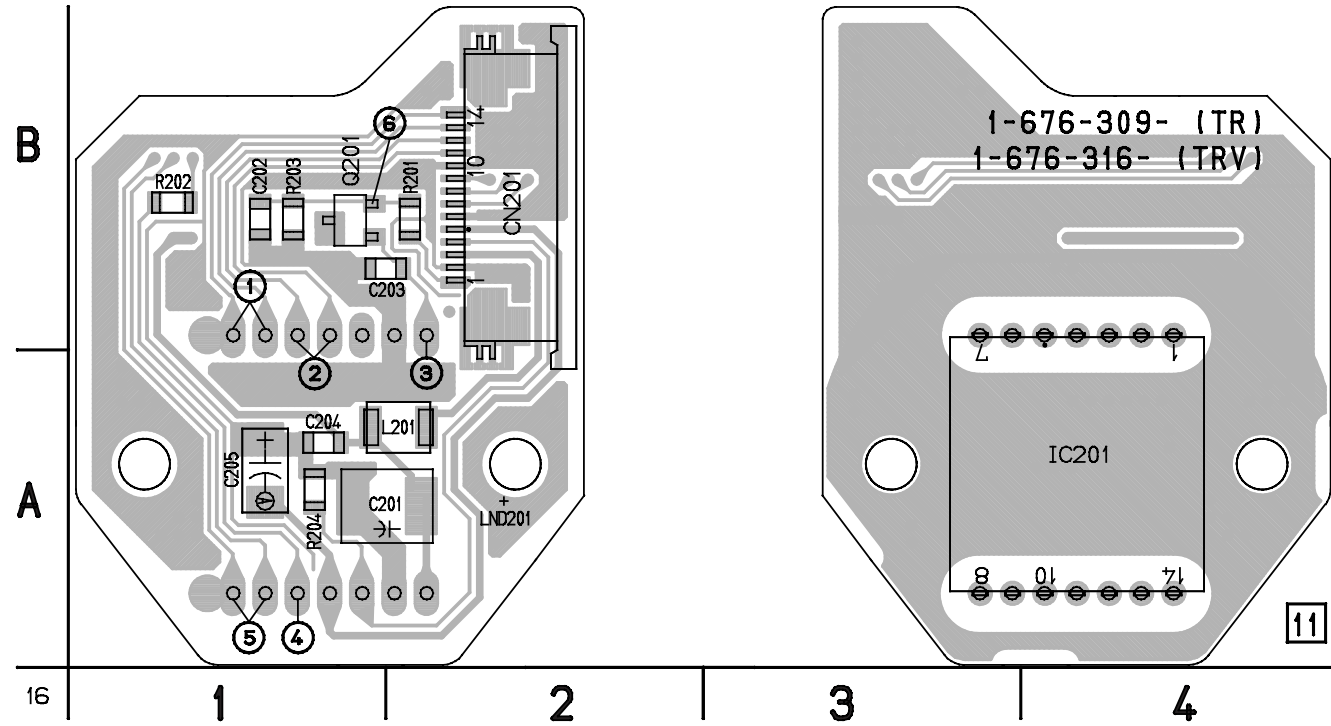
When indicating parts by reference number, please include the board name.

CD-239/240 (CCD IMAGER) PRINTED WIRING BOARD

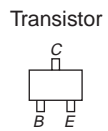
— Ref. No. CD-239/240 Board; 1,000 Series —

CD-239 BOARD (TR MODEL)
CD-240 BOARD (TRV MODEL)
(SIDE A)

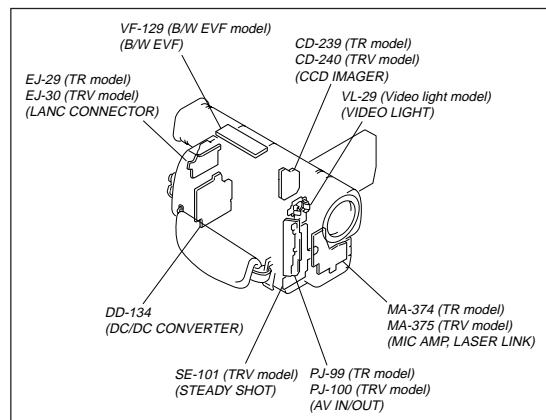
CD-239 BOARD (TR MODEL)
CD-240 BOARD (TRV MODEL)
(SIDE B)



For printed wiring board
• Refer to page 4-98 for location.
• Chip parts

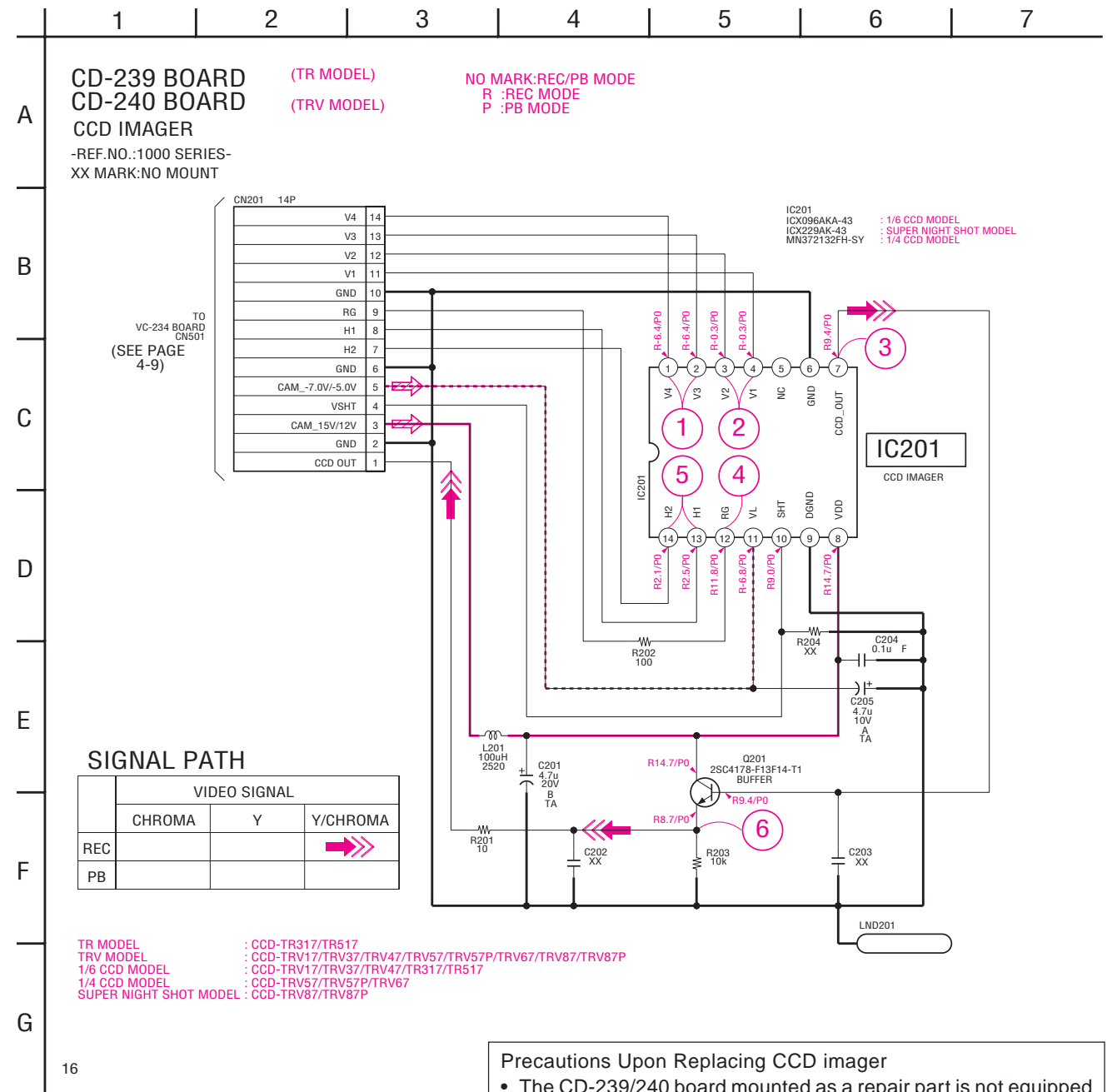


There are few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

• Refer to page 4-93 for waveforms.

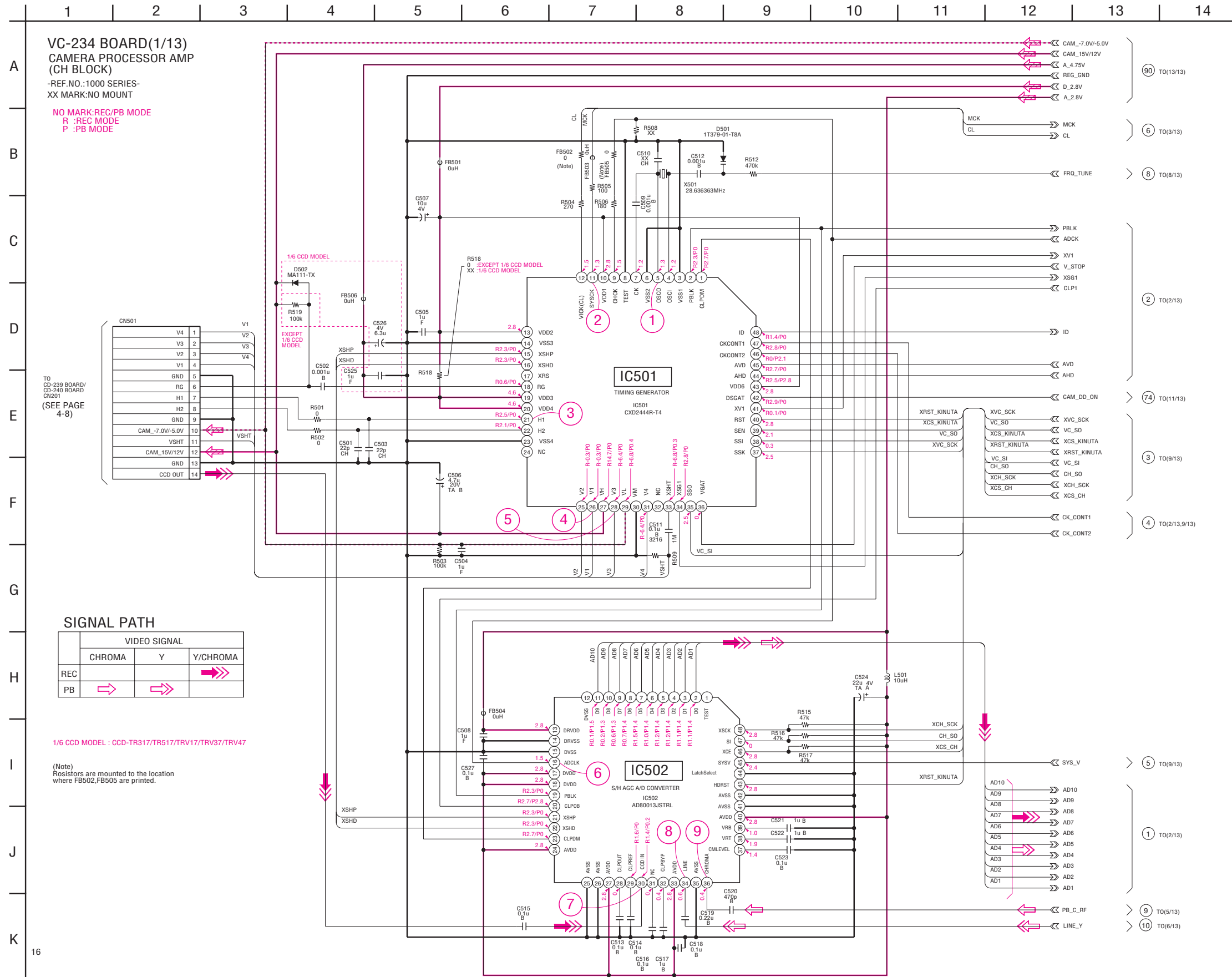


Precautions Upon Replacing CCD imager

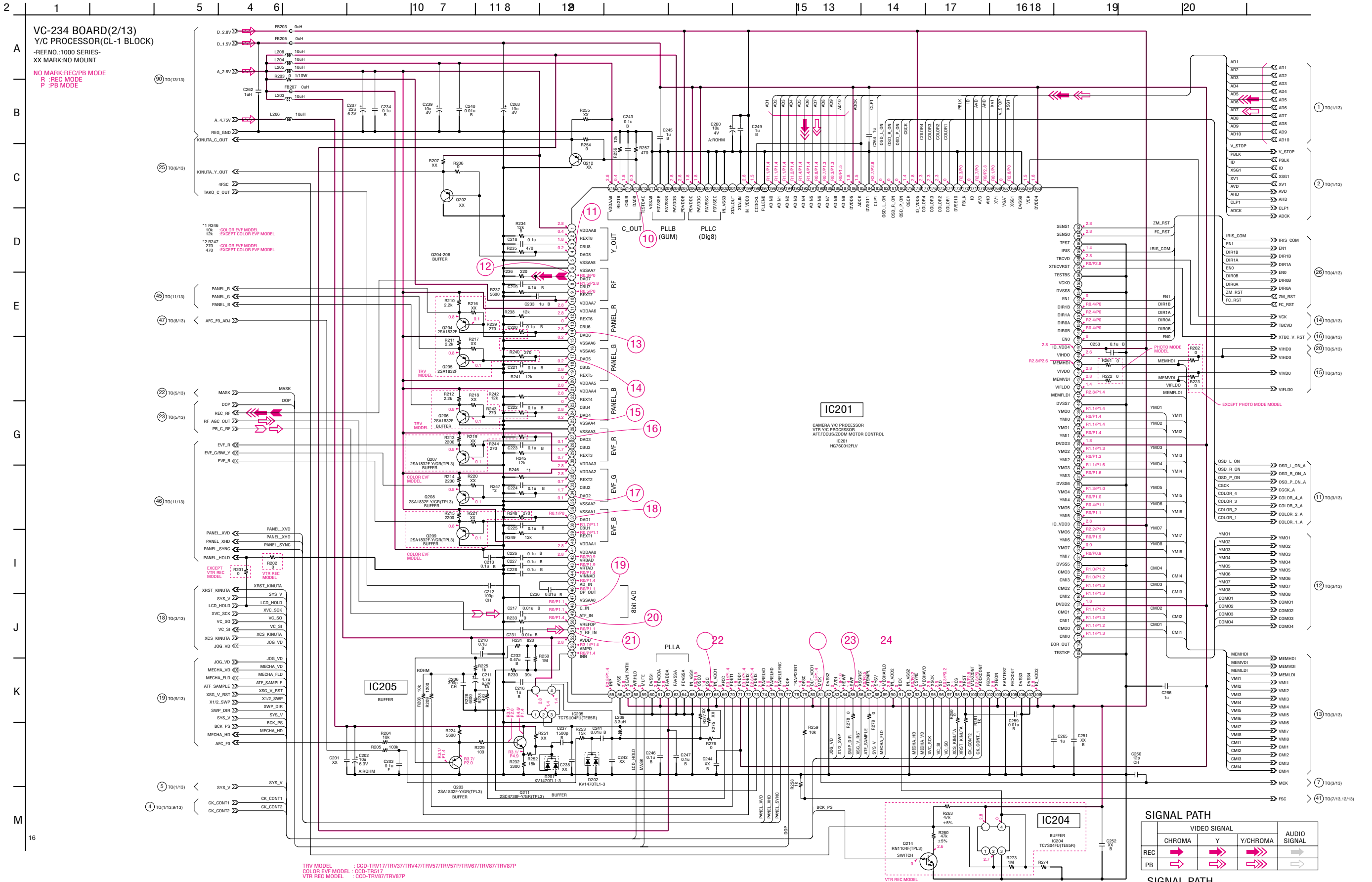
- The CD-239/240 board mounted as a repair part is not equipped with a CCD imager. When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC. In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

For Schematic Diagram

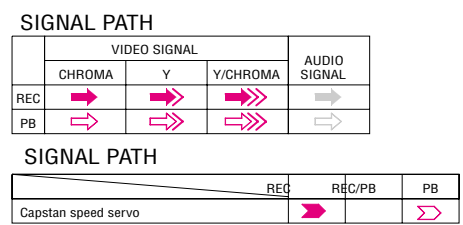
- Refer to page 4-35 for printed wiring board.
- Refer to page 4-93 for waveforms.



For Schematic Diagram
 • Refer to page 4-35 for printed wiring board.
 • Refer to page 4-94 for waveforms.

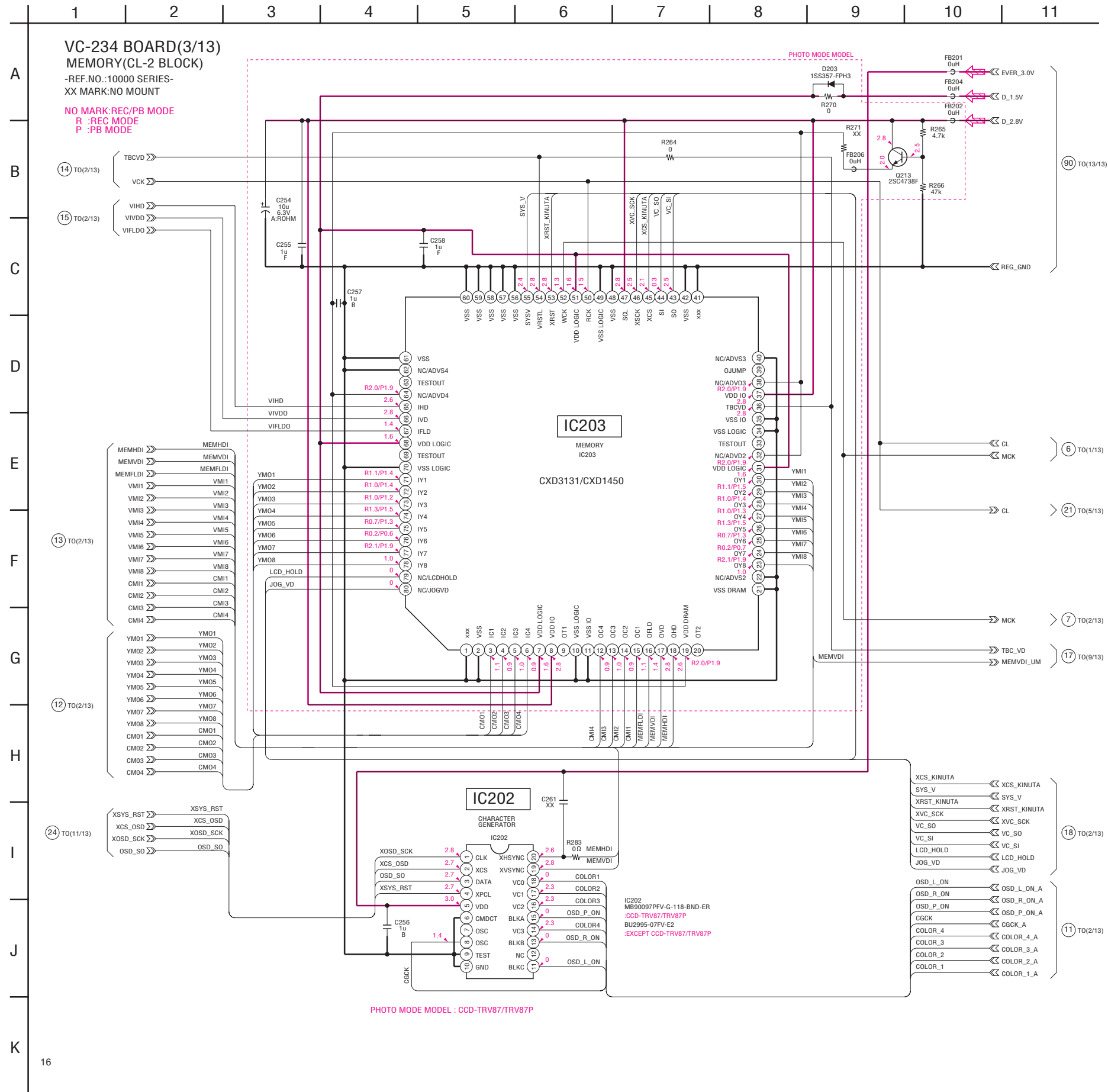


TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P
 COLOR EVF MODEL : CCD-TR517
 VTR REC MODEL : CCD-TRV57/TRV87P



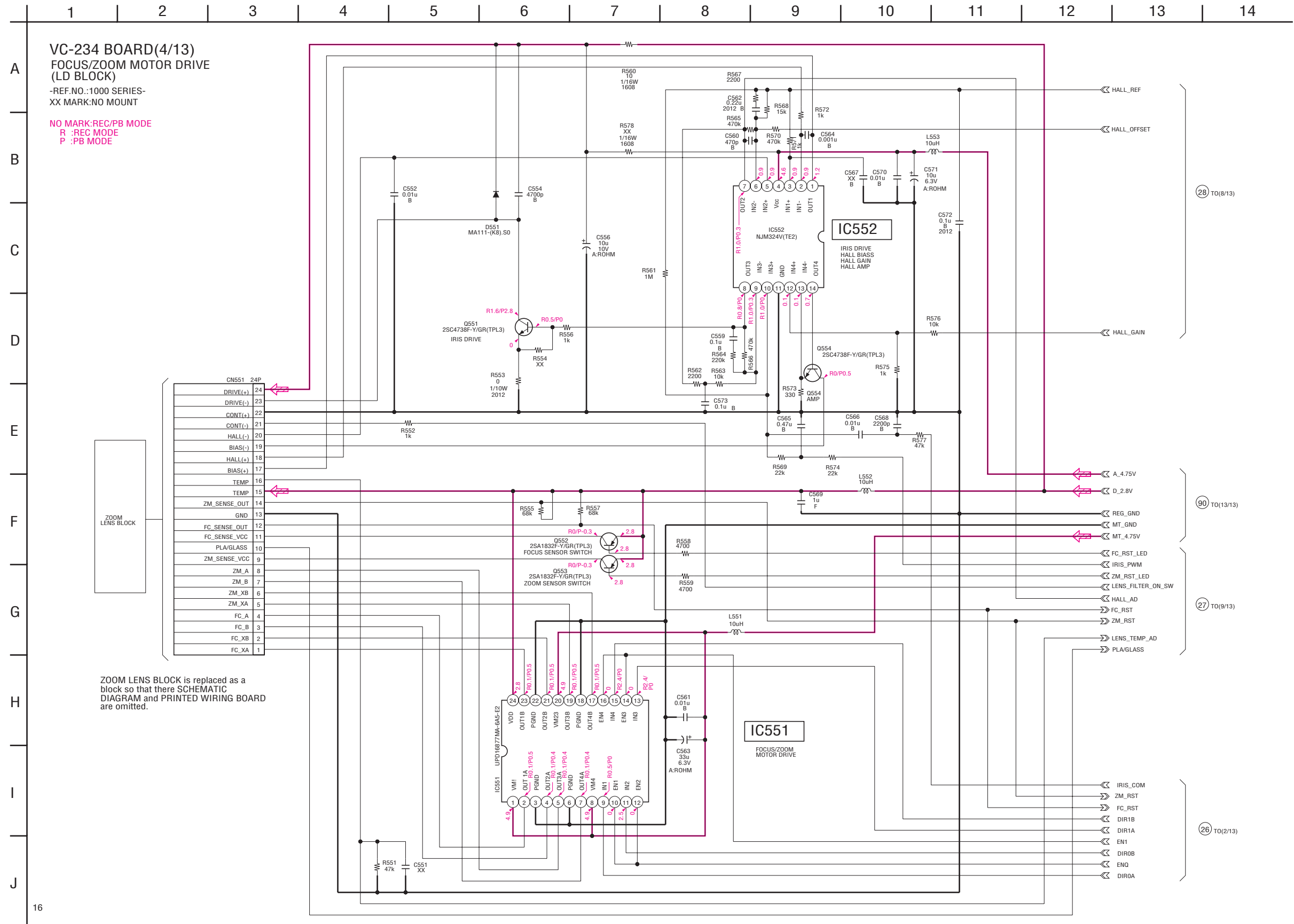
For Schematic Diagram

• Refer to page 4-35 for printed wiring board.



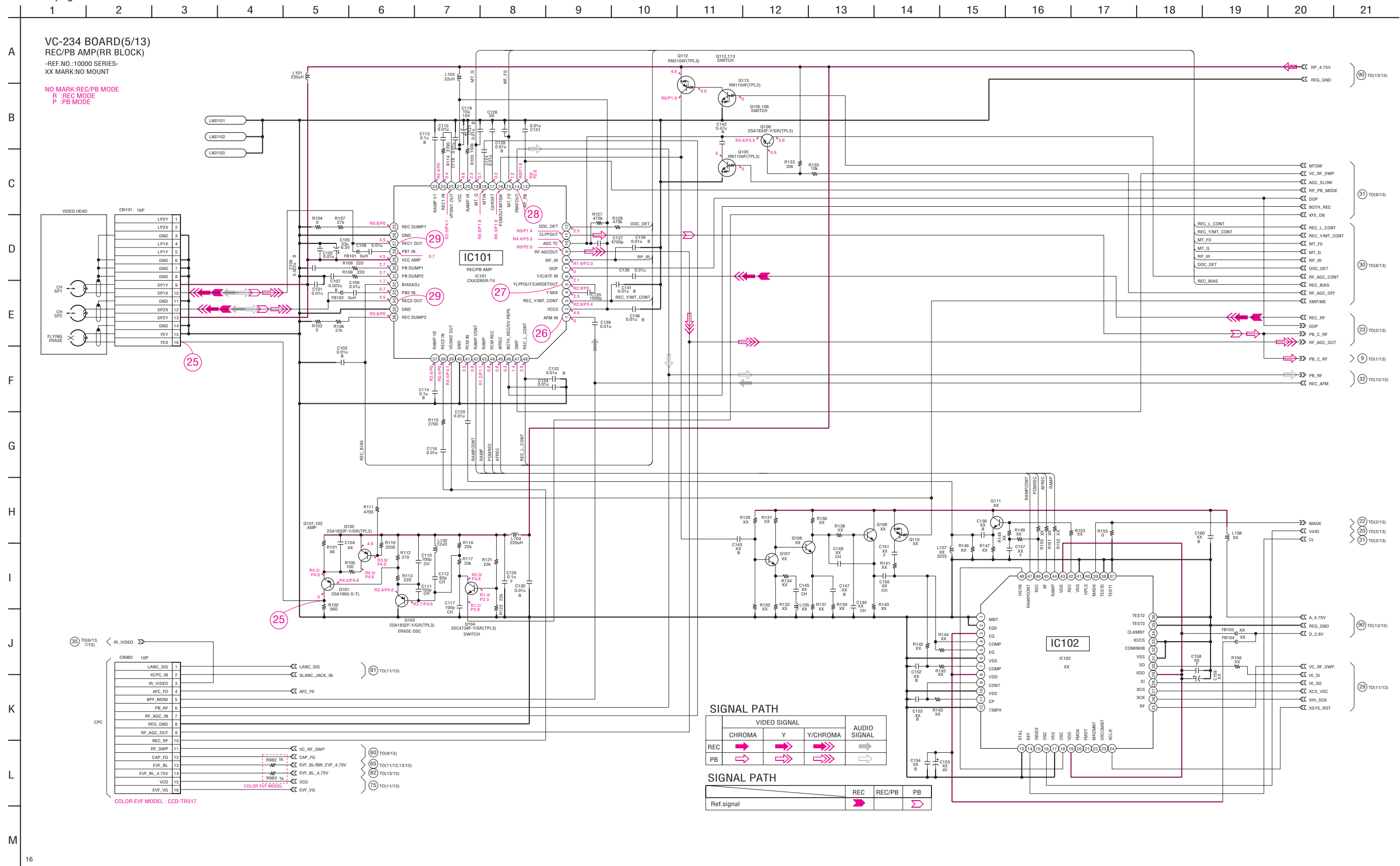
CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

For Schematic Diagram
• Refer to page 4-35 for printed wiring board.



For Schematic Diagram

- Refer to page 4-35 for printed wiring board.
- Refer to page 4-94 for waveforms.



CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

For Schematic Diagram

- Refer to page 4-35 for printed wiring board.
- Refer to page 4-95 for waveforms.

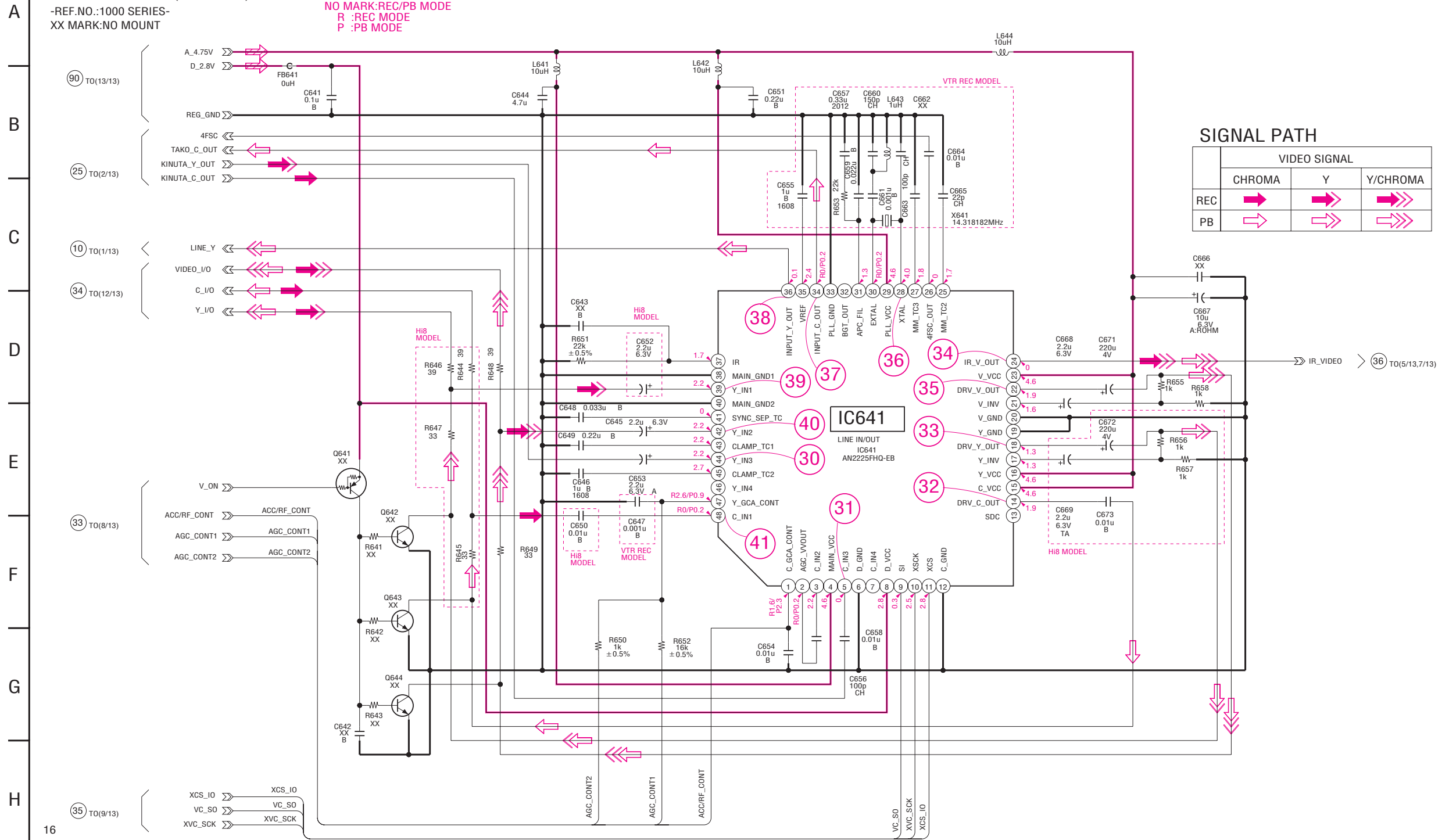
1 2 3 4 5 6 7 8 9 10 11 12 13

VC-234 BOARD(6/13)
LINE IN/OUT AMP(10 BLOCK)

-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT

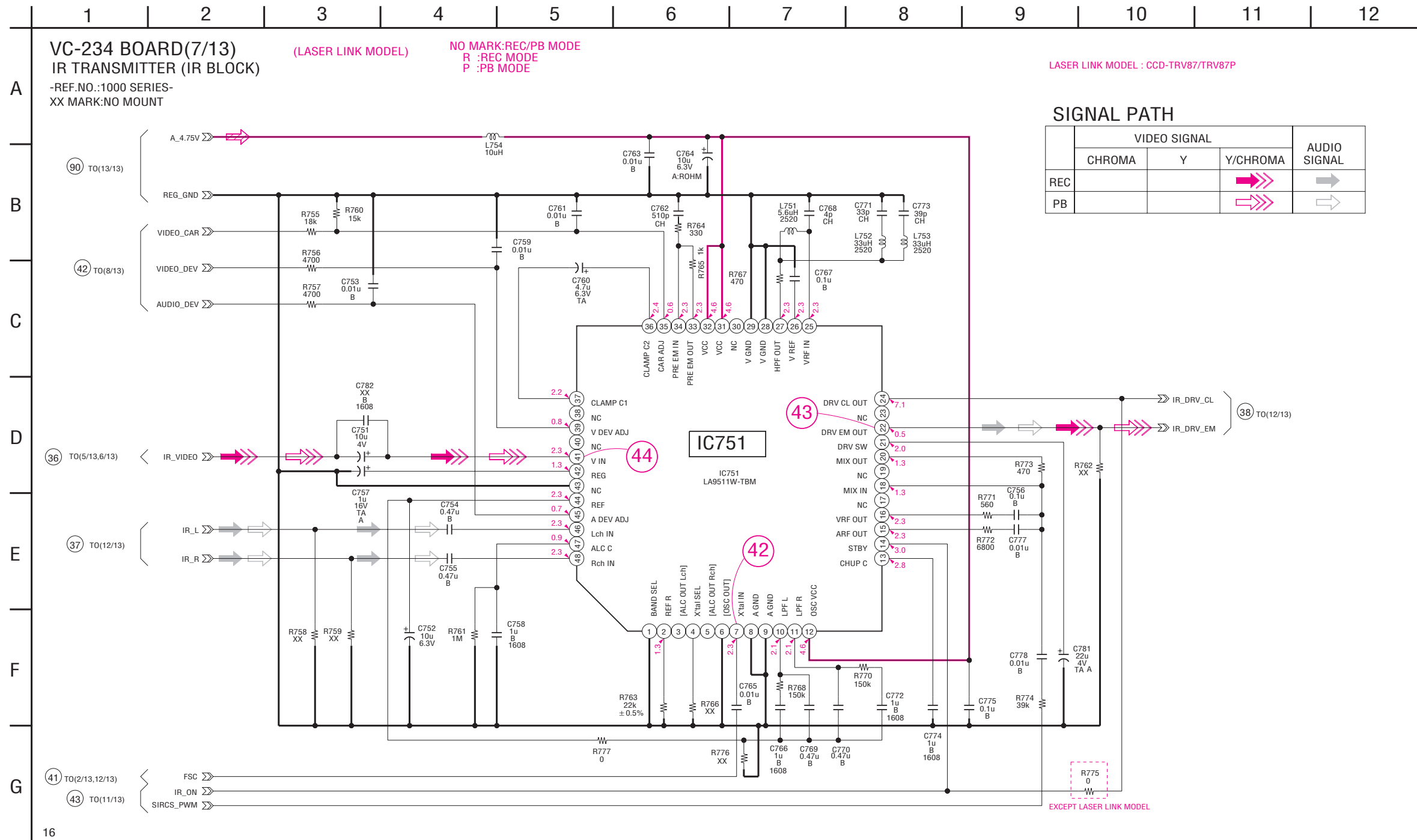
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

VTR REC MODEL : CCD-TRV87/TRV87P
H18 MODEL : CCD-TRV67/TRV87/TRV87P



For Schematic Diagram

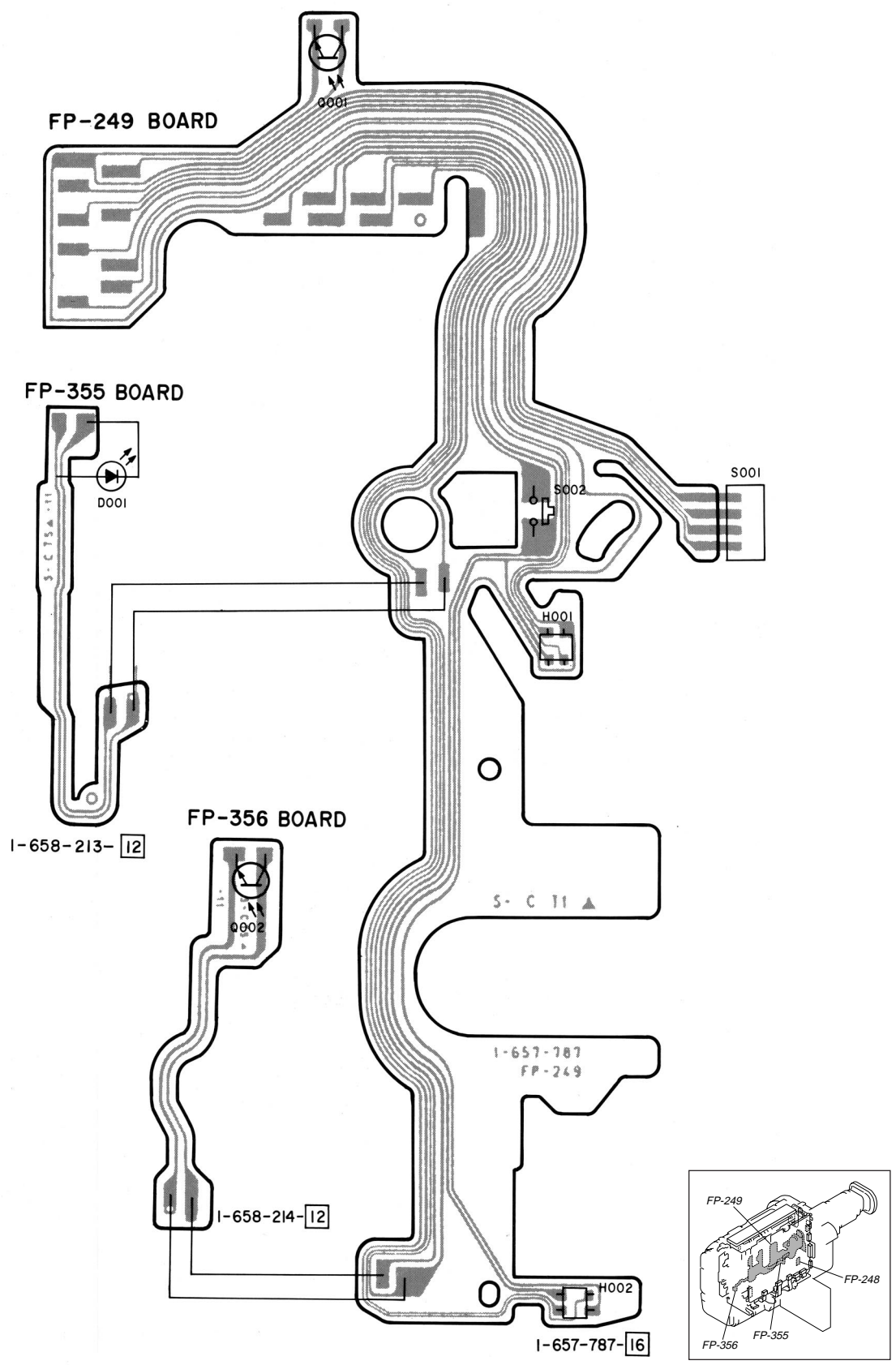
- Refer to page 4-35 for printed wiring board.
- Refer to page 4-95 for waveforms.



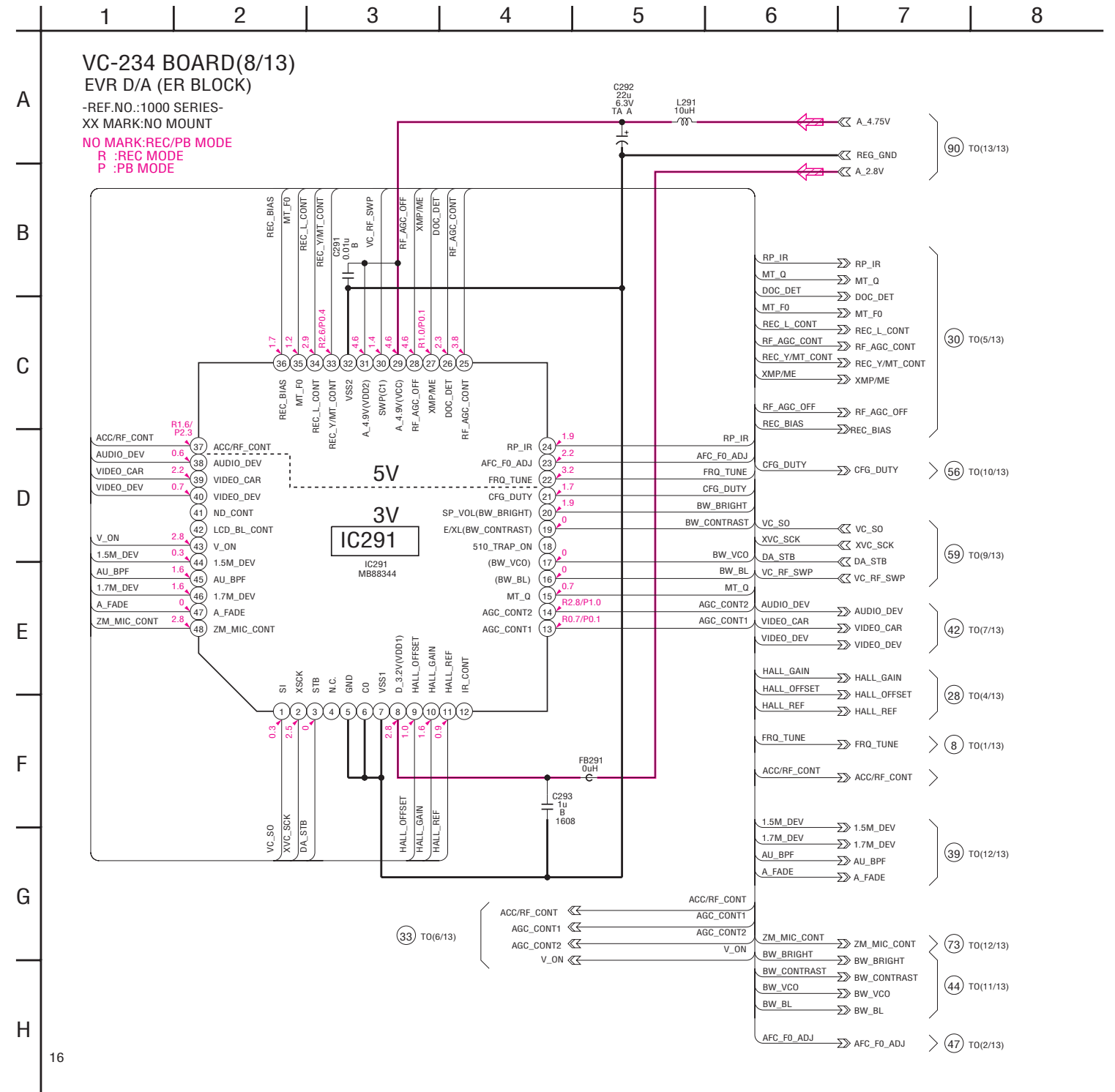
16

CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

FP-249 (S/T REEL SENSOR, TAPE TOP), FP-356 (TAPE END), FP-355 (TAPE LED) FLEXIBLE BOARD
— Ref. No. FP-249, 356, 355 FLEXIBLE board; 5,000 series —

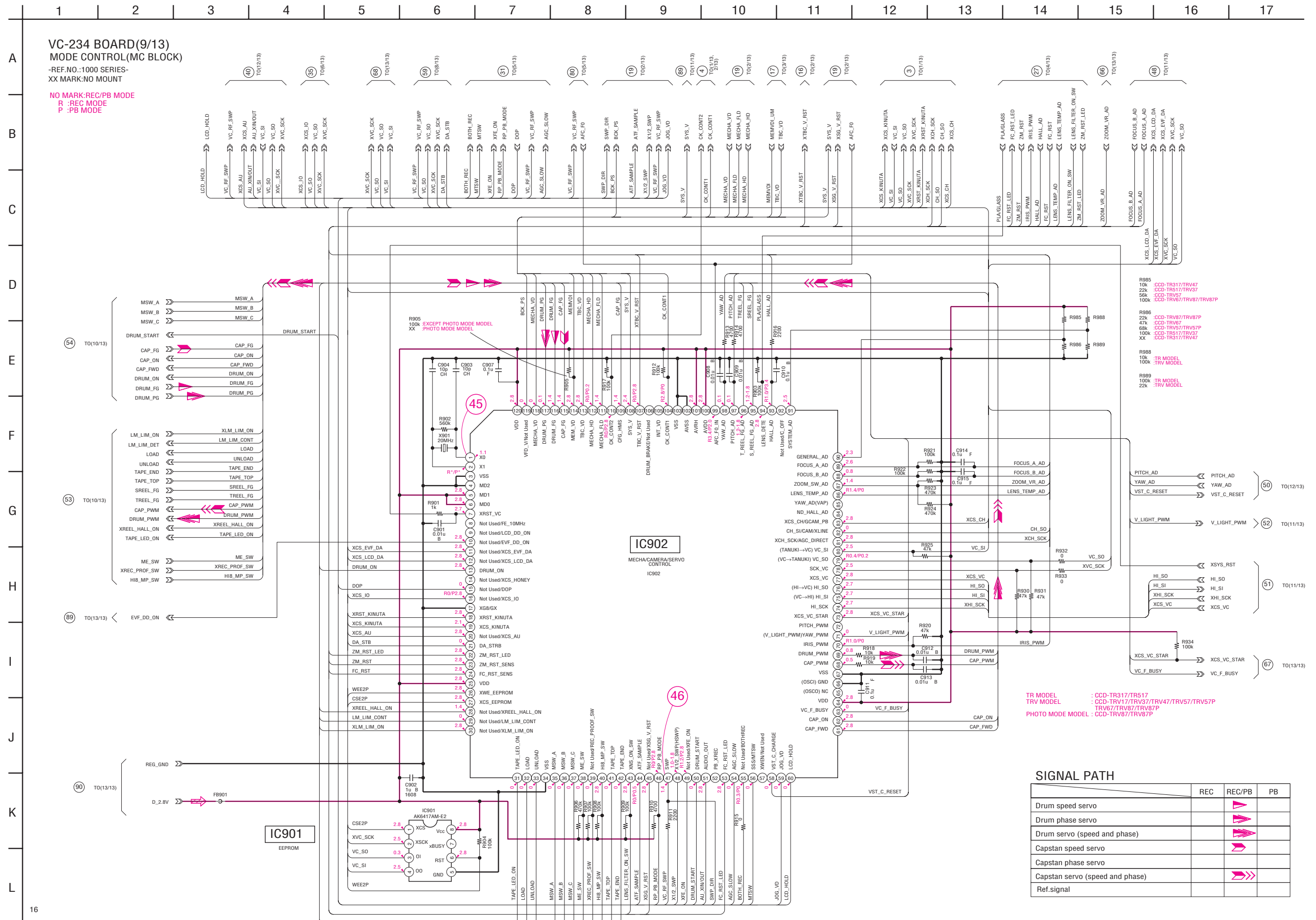


For Schematic Diagram
• Refer to page 4-35 for printed wiring board.



For Schematic Diagram

- Refer to page 4-35 for printed wiring board.
- Refer to page 4-95 for waveforms.



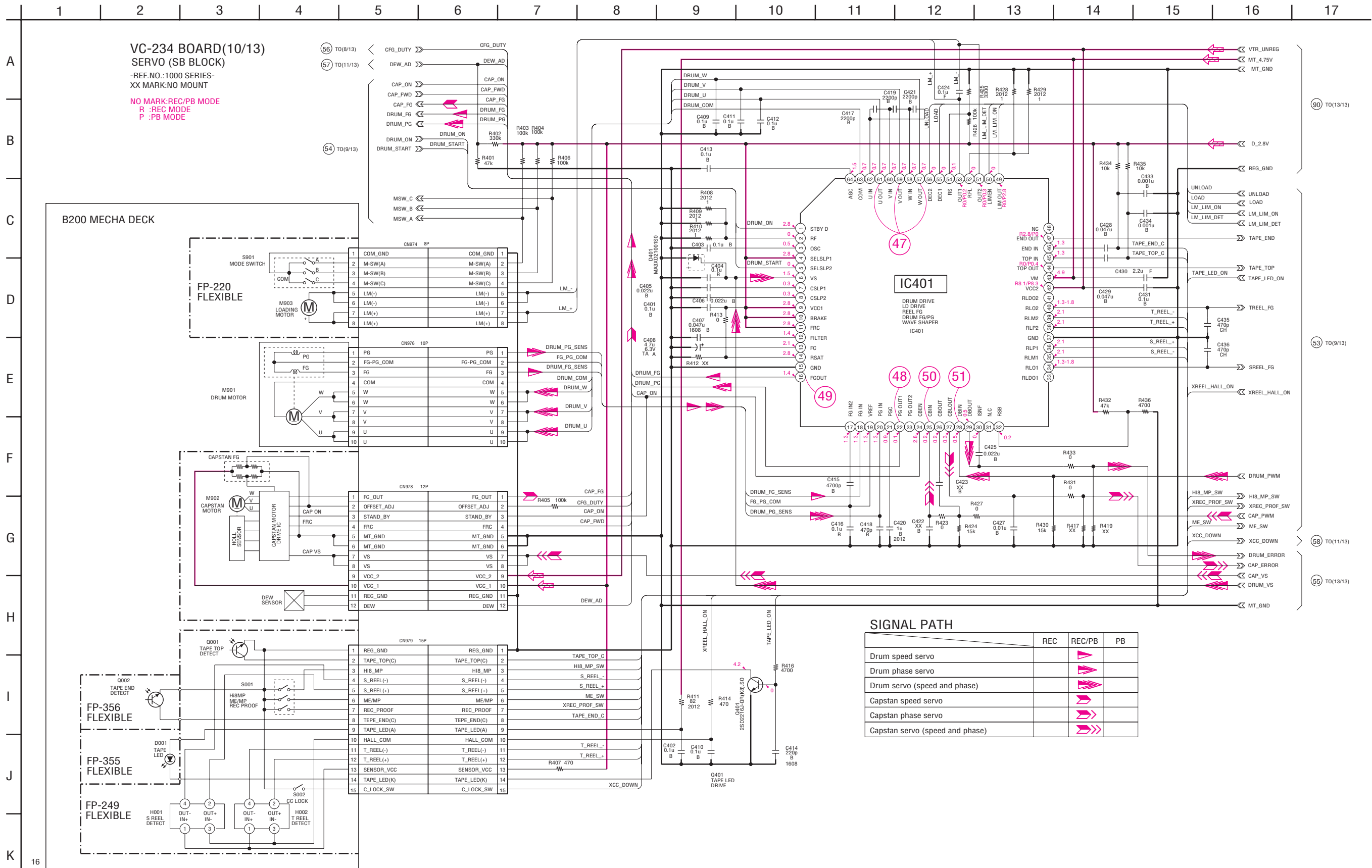
SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶	
Drum servo (speed and phase)		▶	
Capstan speed servo		▶	
Capstan phase servo		▶	
Capstan servo (speed and phase)		▶	▶
Ref.signal			

CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

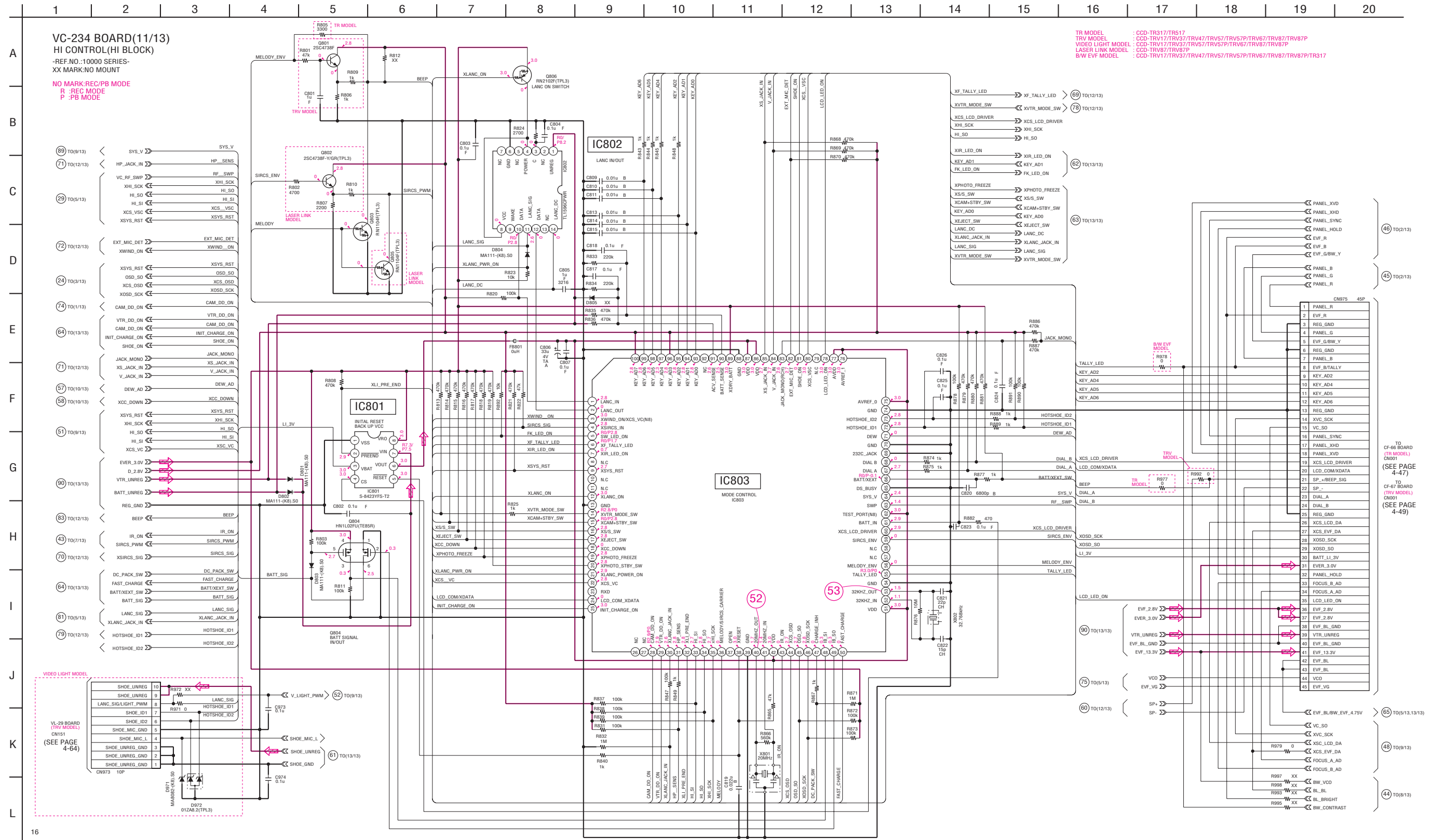
For Schematic Diagram

- Refer to page 4-35 for printed wiring board.
- Refer to page 4-95 for waveforms.
- Refer to page 4-23 for FP-249, FP-356, FP-355 flexible board.



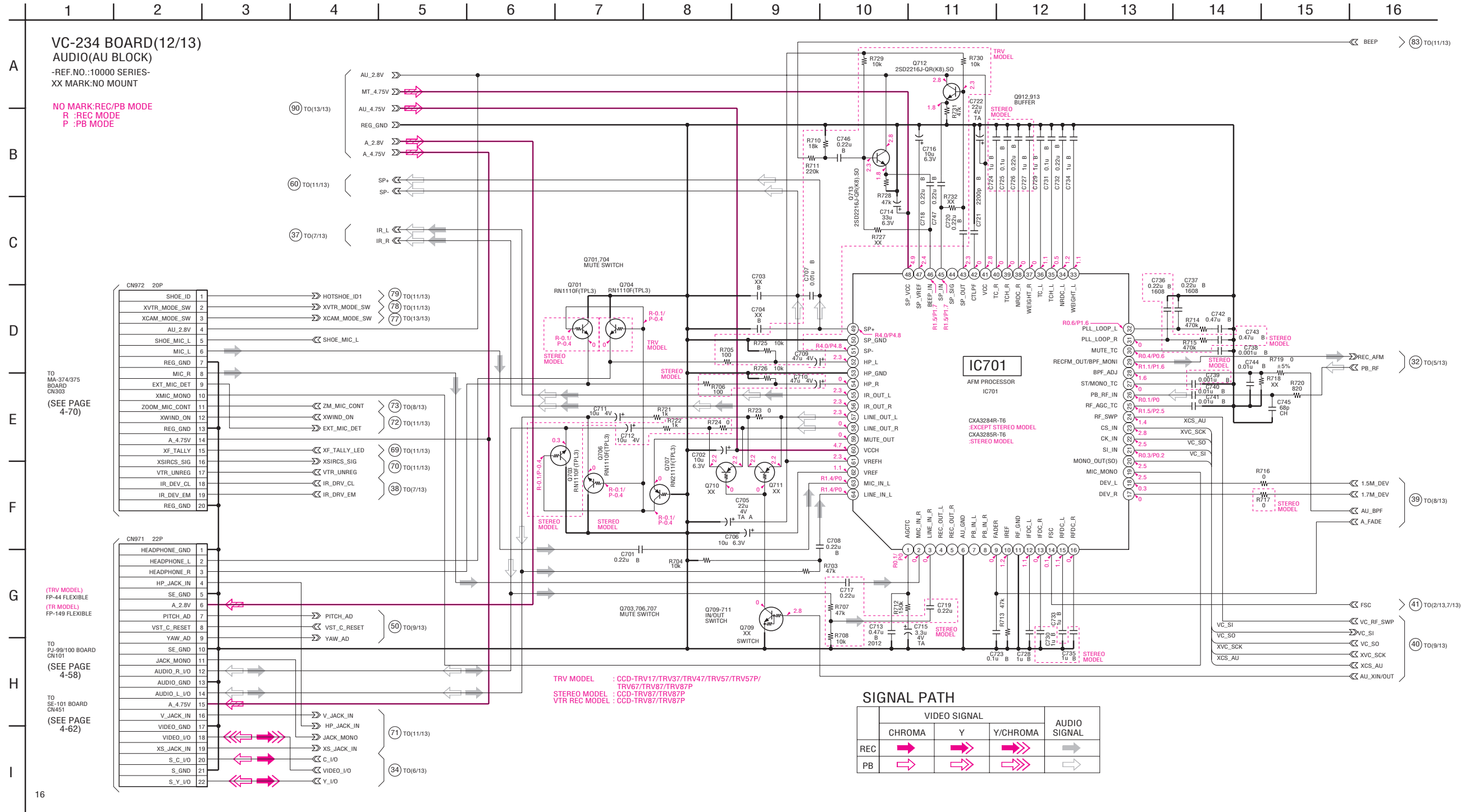
For Schematic Diagram

- Refer to page 4-35 for printed wiring board.
- Refer to page 4-95 for waveforms.



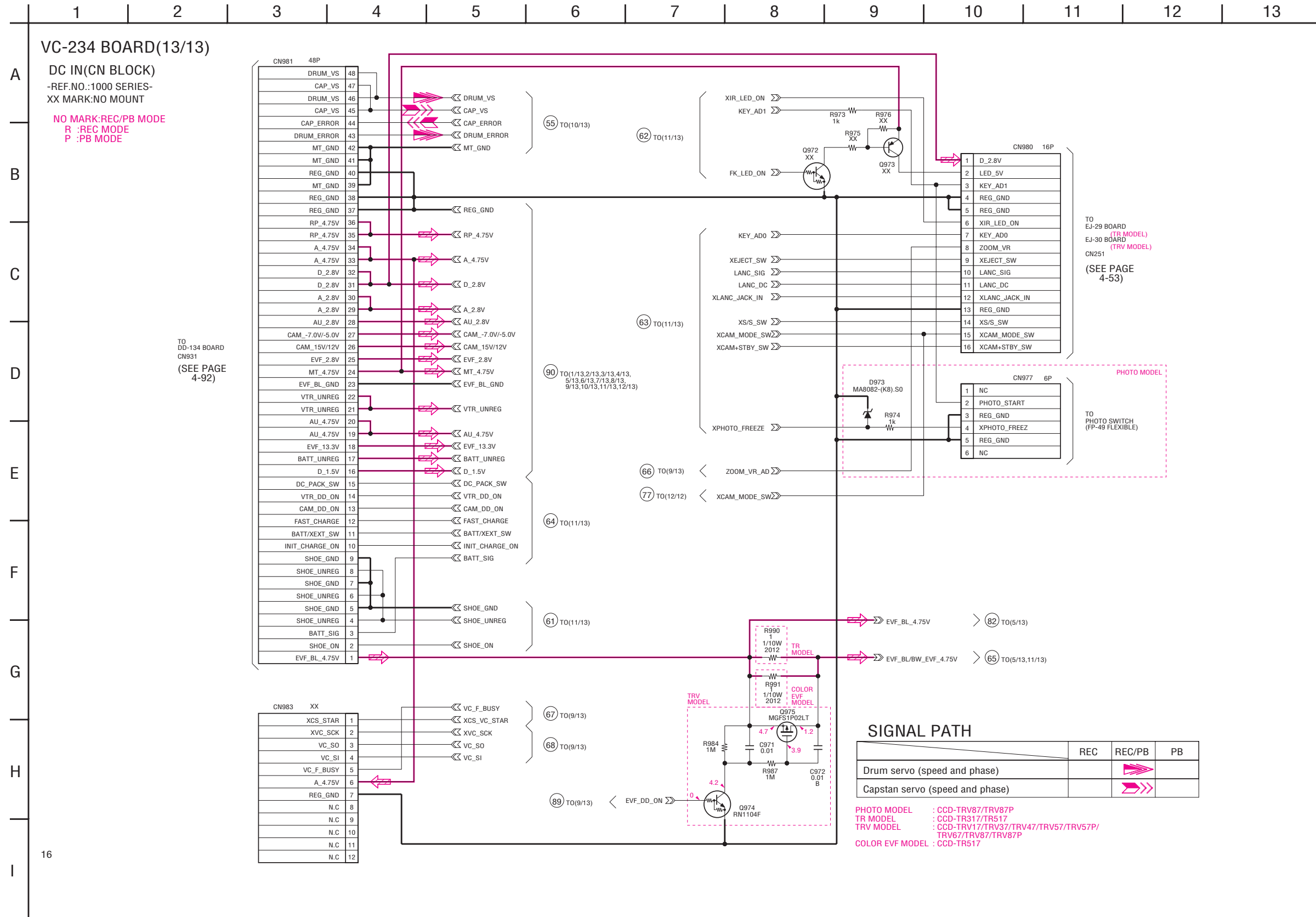
CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

For Schematic Diagram
• Refer to page 4-35 for printed wiring board.



For Schematic Diagram

• Refer to page 4-35 for printed wiring board.

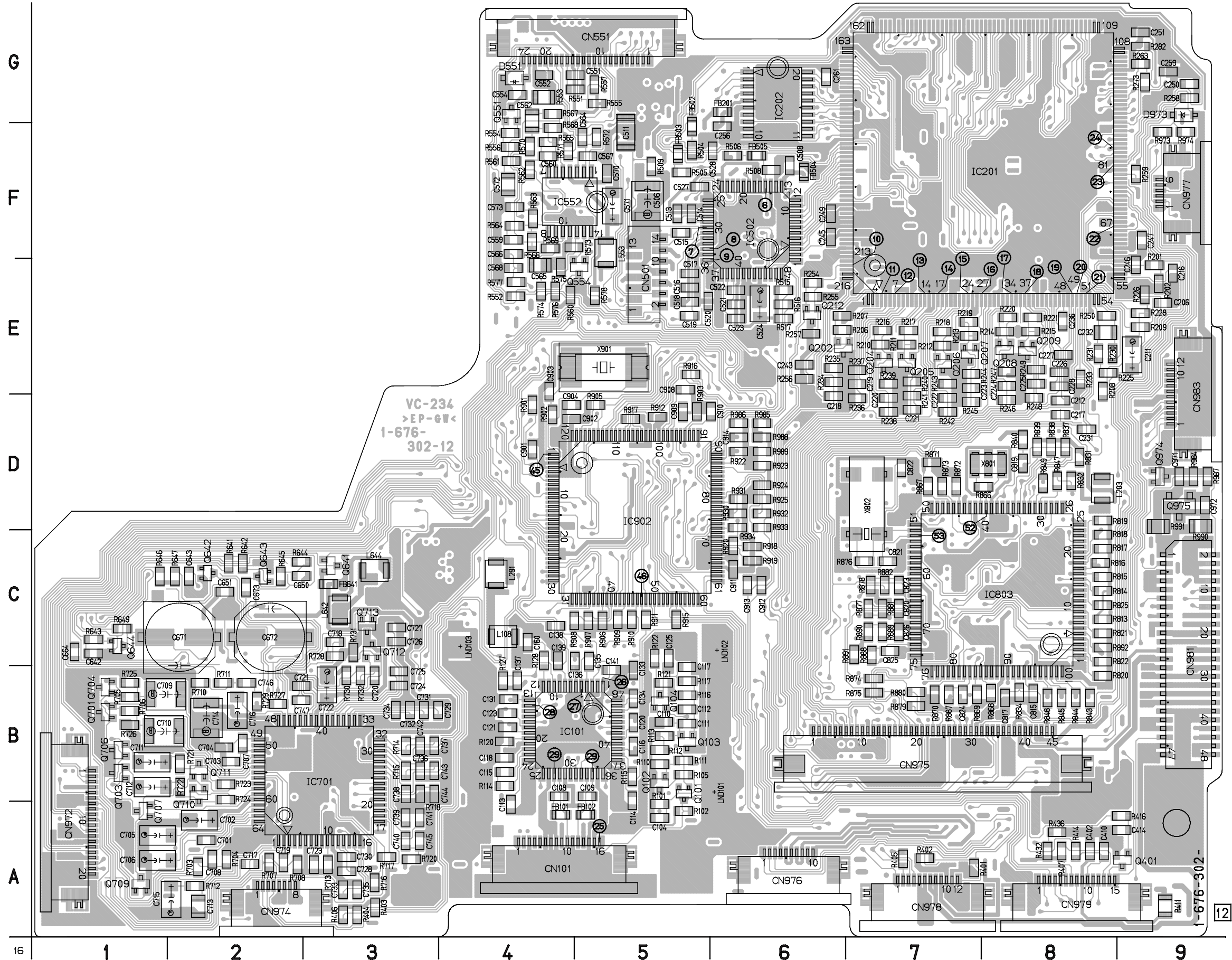


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VC-234 (CAMERA, Y/C PROCESSOR, FOCUS/ZOOM MOTOR DRIVE, REC/PB AMP, LINE IN/OUT, MODE CONTROL, SERVO, HI CONTROL, AUDIO)
PRINTED WIRING BOARD

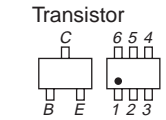
— Ref. No. VC-234 Board; 1,000 Series —

VC-234 BOARD (SIDE A)

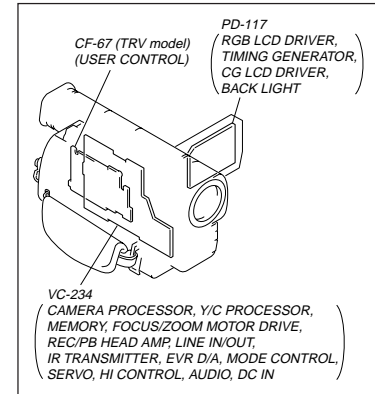


For printed wiring board

- Refer to page 4-98, 99 for location.
- This board is six-layer print board. However, the patterns of layers two to five have not been included in the diagram.
- Chip parts



There are few cases that the part printed on this diagram isn't mounted in this model.



VC-234 BOARD (SIDE B)



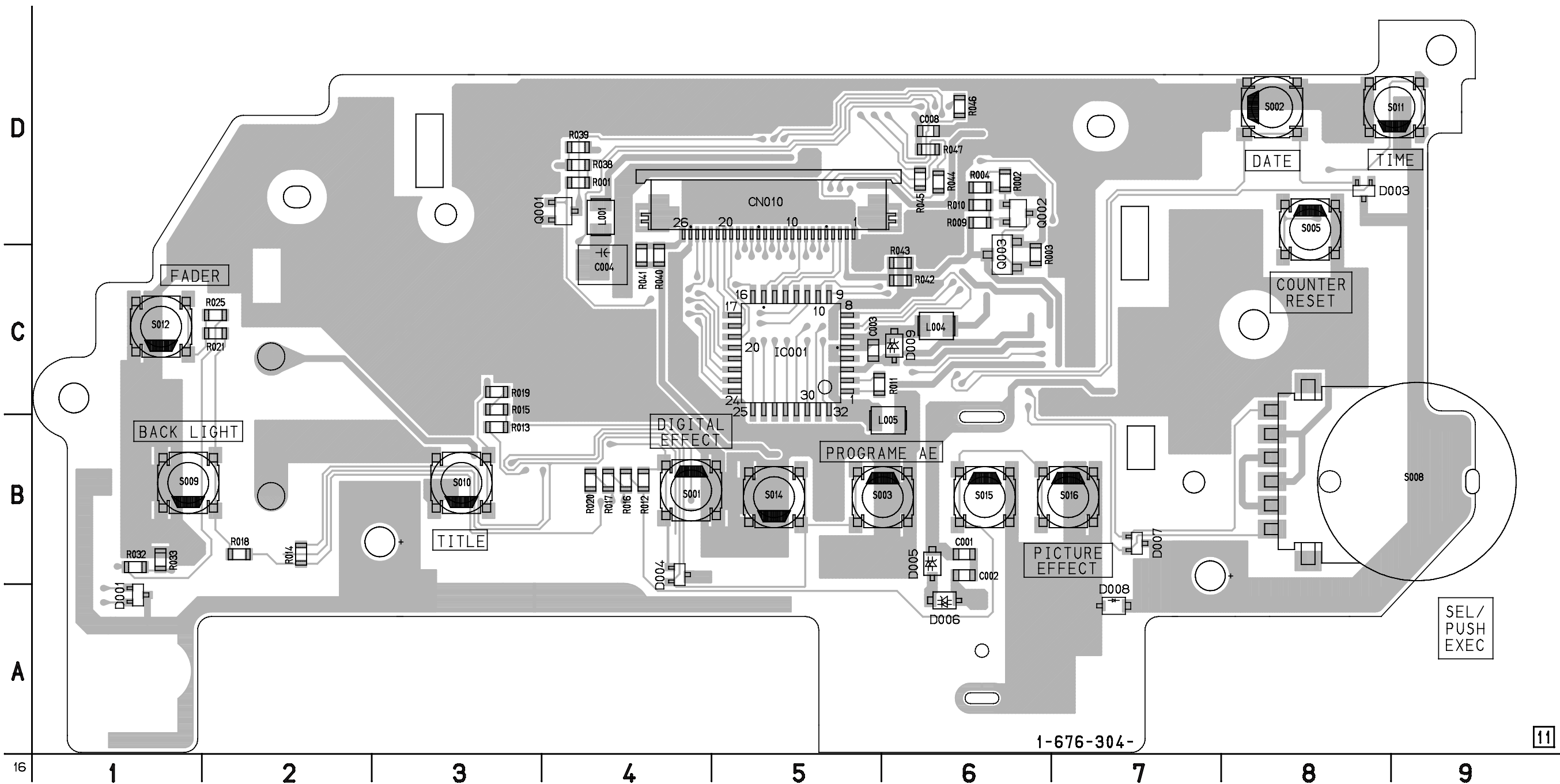
1-676-302-

12

CF-66 (USER CONTROL) PRINTED WIRING BOARD

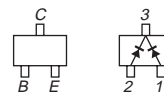
— Ref. No. CF-66 Board: 1,000 Series —

CF-66 BOARD (SIDE A) (TR MODEL)

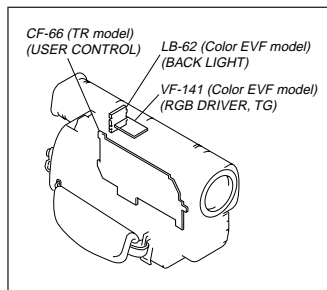


For printed wiring board
 • Refer to page 4-99 for location.
 • Chip parts

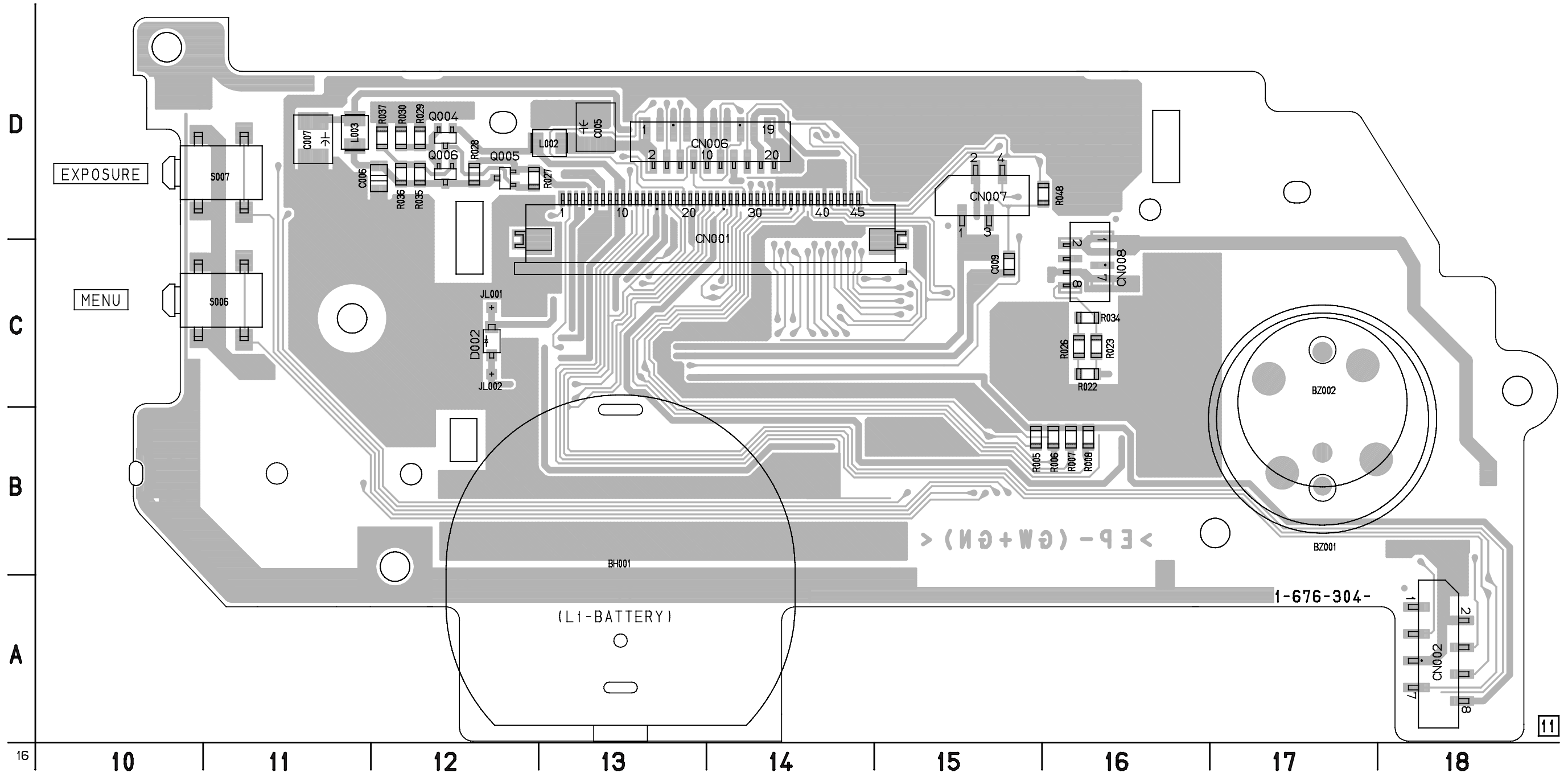
Transistor Diode



There are few cases that the part printed on this diagram isn't mounted in this model.

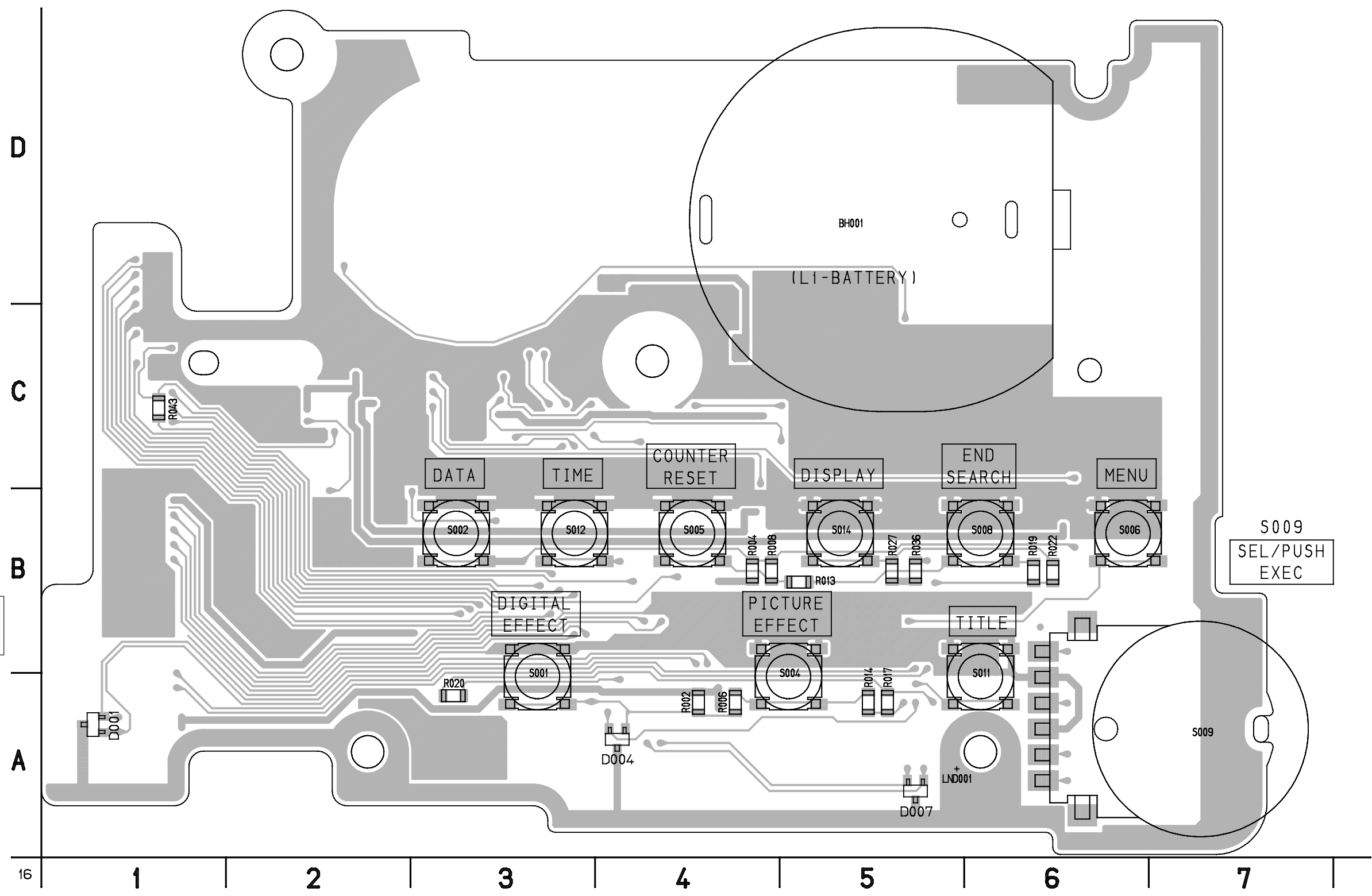


CF-66 BOARD (SIDE B) (TR MODEL)

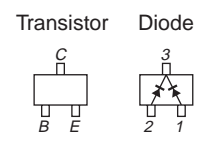


CF-67 (USER CONTROL) PRINTED WIRING BOARD
— Ref. No. CF-67 Board; 1,000 Series —

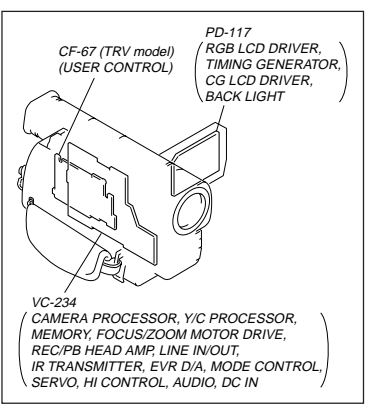
CF-67 BOARD (SIDE A) (TRV MODEL)



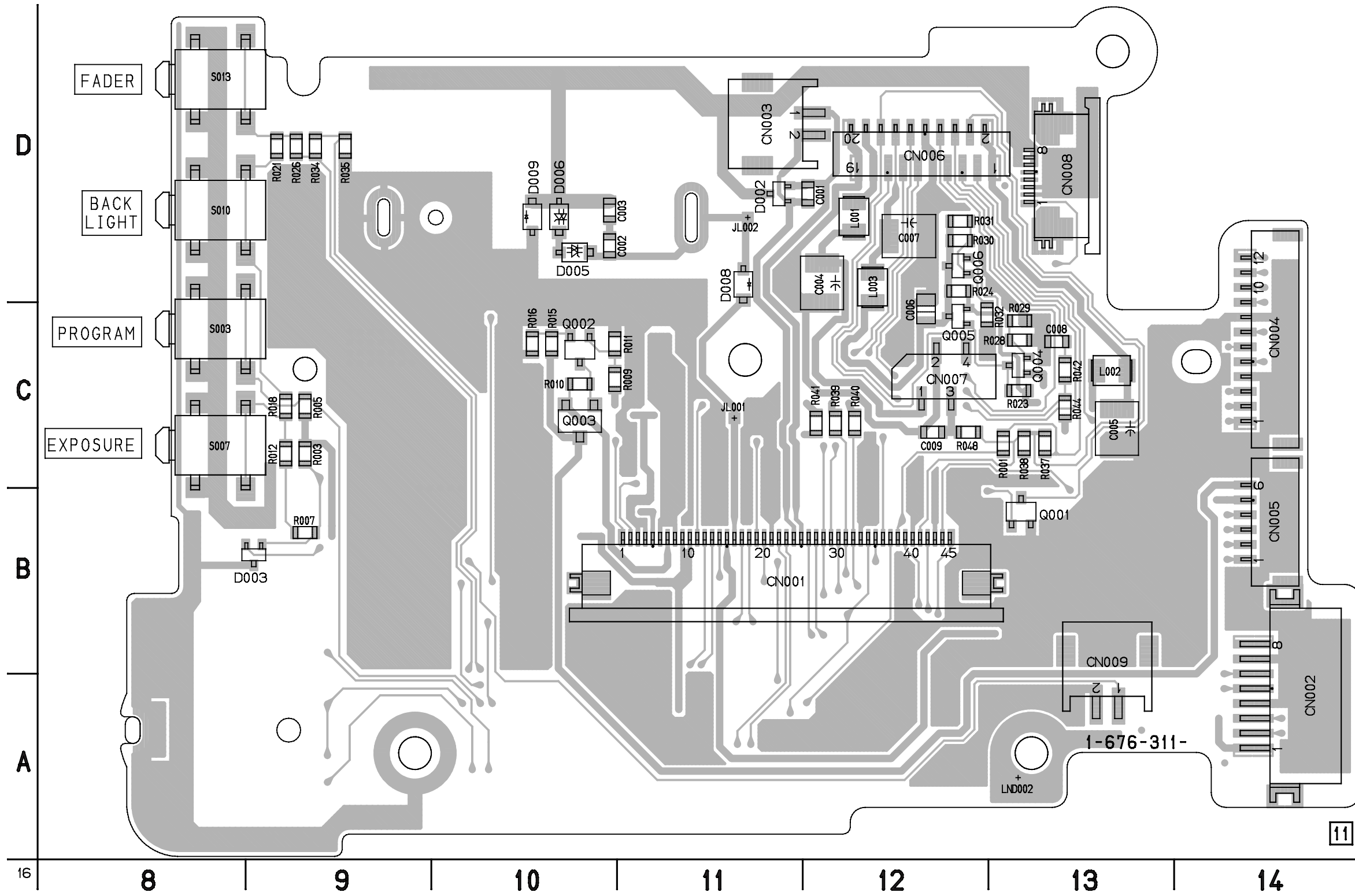
For printed wiring board
• Refer to page 4-100 for location.
• Chip parts



There are few cases that the part printed on this diagram isn't mounted in this model.



CF-67 BOARD (SIDE B) (TRV MODEL)



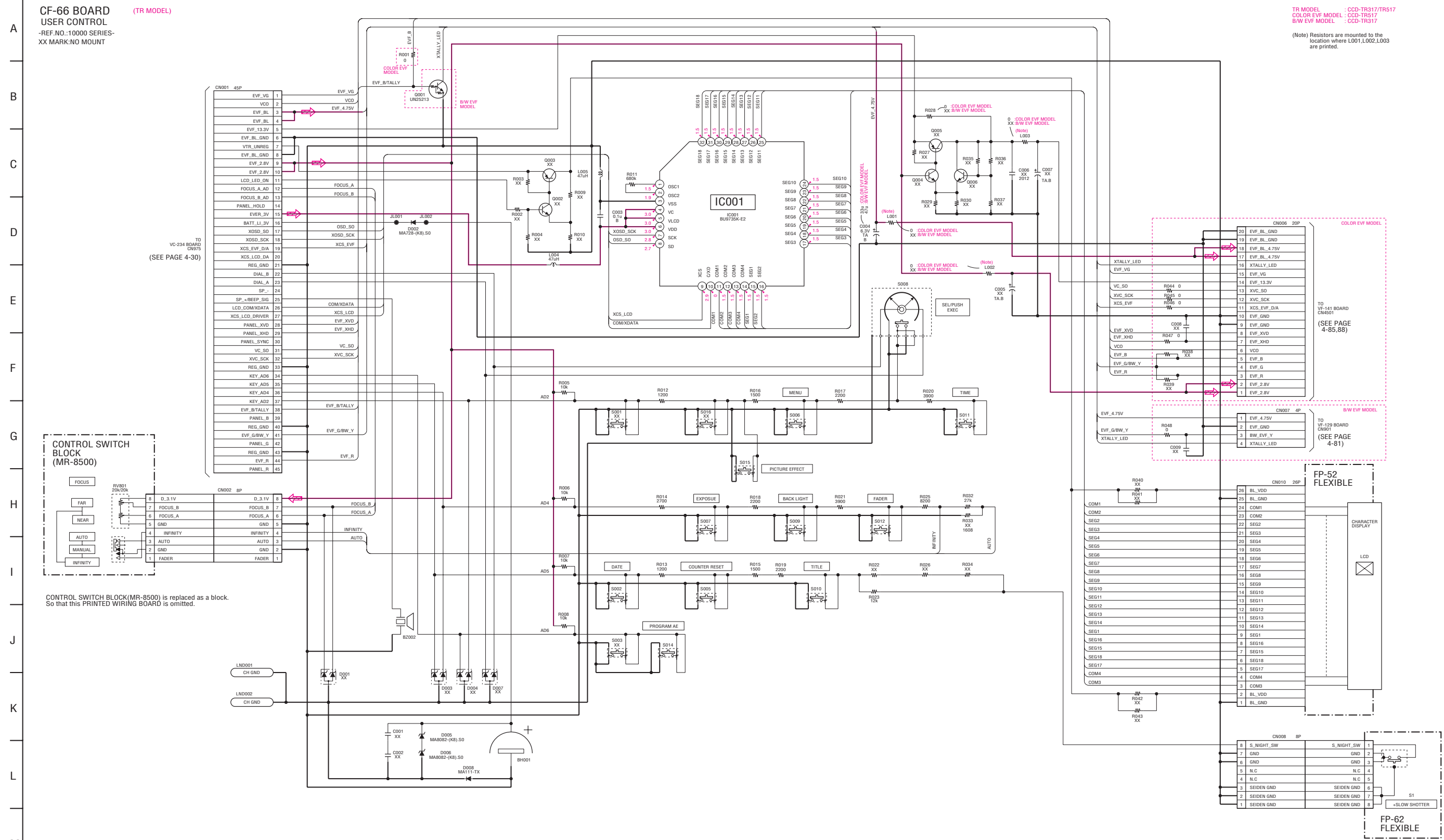
1-676-311-

11

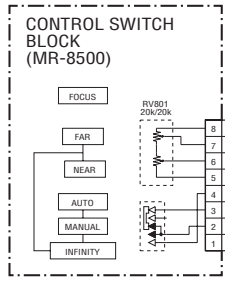
CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

For Schematic Diagram
Refer to page 4-39 for printed wiring board.

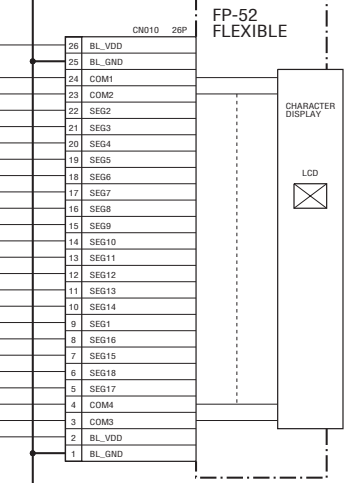
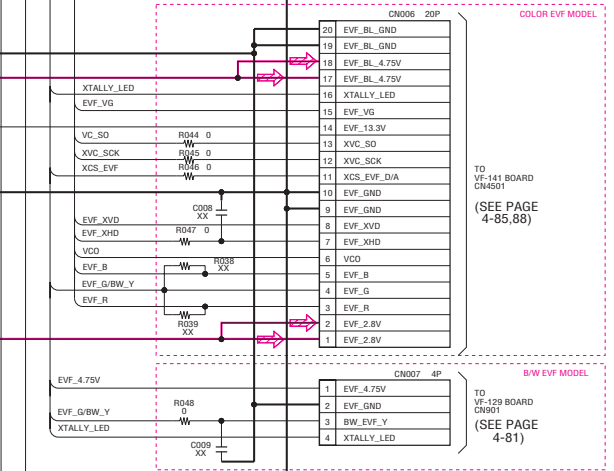
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21



TR MODEL : CCD-TR317/TR517
COLOR EVF MODEL : CCD-TR517
B/W EVF MODEL : CCD-TR317
(Note) Resistors are mounted to the location where L001,L002,L003 are printed.



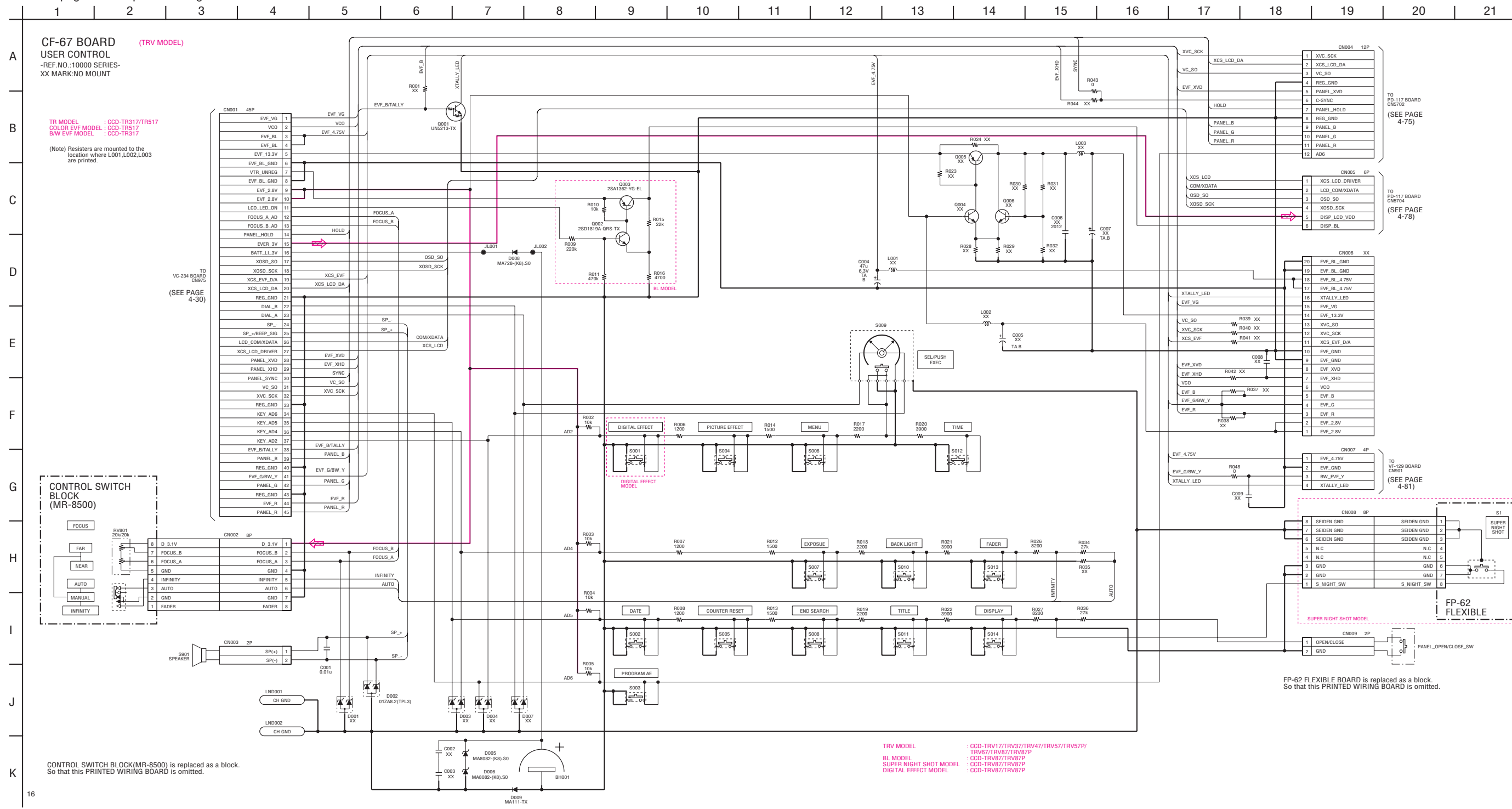
CONTROL SWITCH BLOCK(MR-8500) is replaced as a block. So that this PRINTED WIRING BOARD is omitted.



FP-52,FP-62 FLEXIBLE BOARD are replaced as a block. So that those PRINTED WIRING BOARD is omitted.

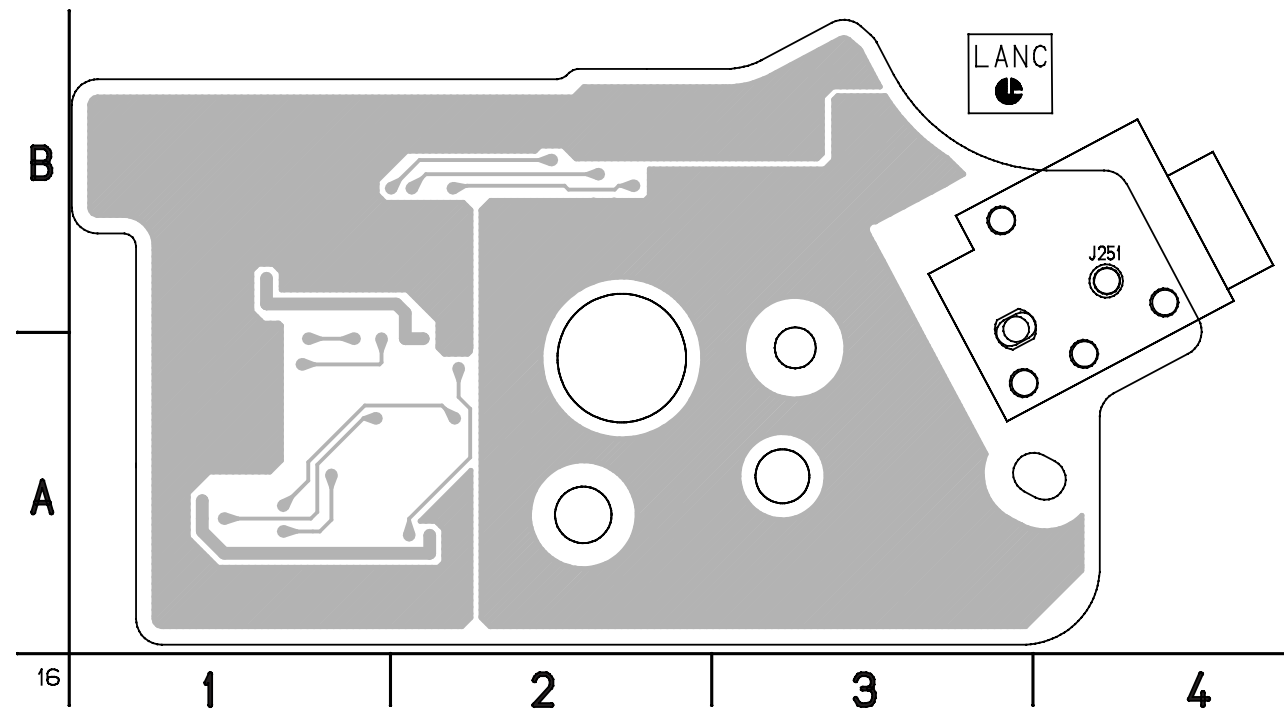
For Schematic Diagram

• Refer to page 4-43 for printed wiring board.

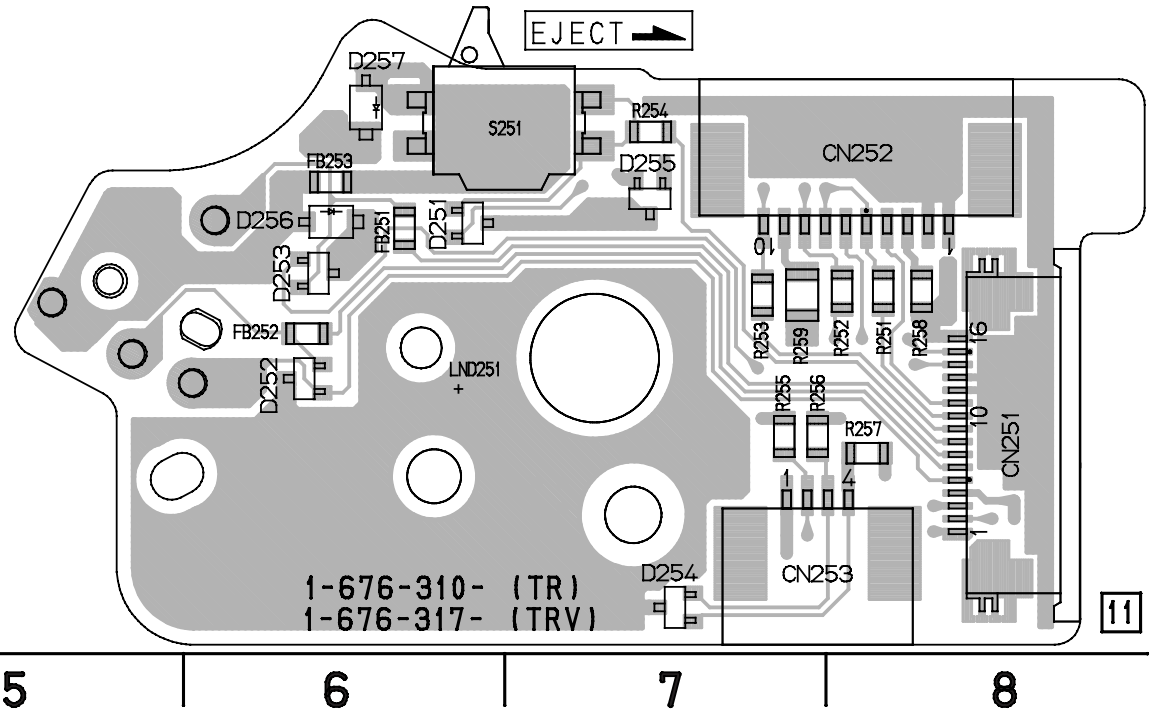


EJ-29/30 (LANC CONNECTOR), SS-9700 (START/STOP SWITCH) PRINTED WIRING BOARDS
— Ref. No. EJ-29/30 Board; 1,000 Series —

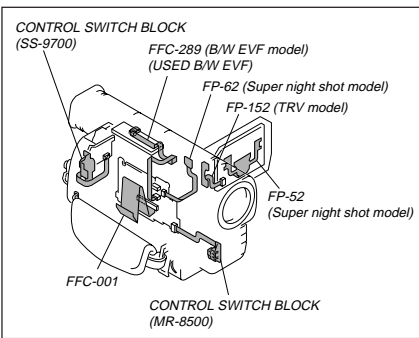
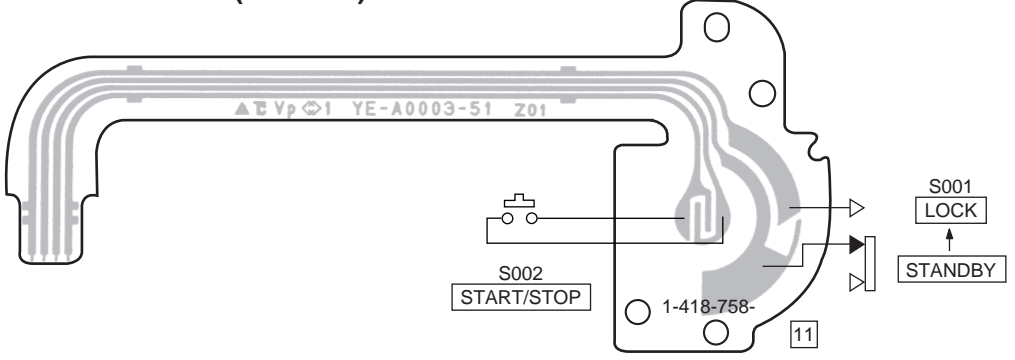
EJ-29 BOARD (SIDE A) (TR MODEL)
EJ-30 BOARD (SIDE A) (TRV MODEL)



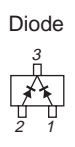
EJ-29 BOARD (SIDE B) (TR MODEL)
EJ-30 BOARD (SIDE B) (TRV MODEL)



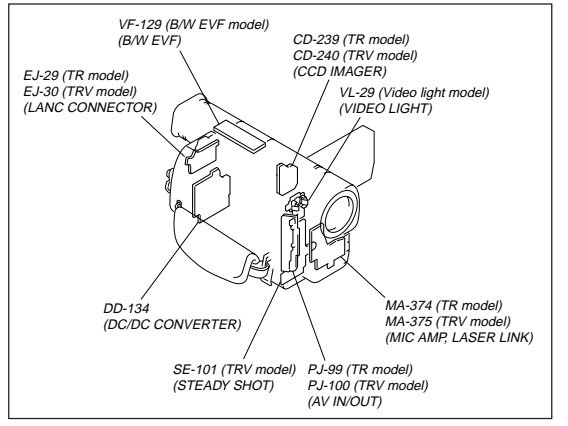
CONTROL SWITCH BLOCK
(SS-9700)

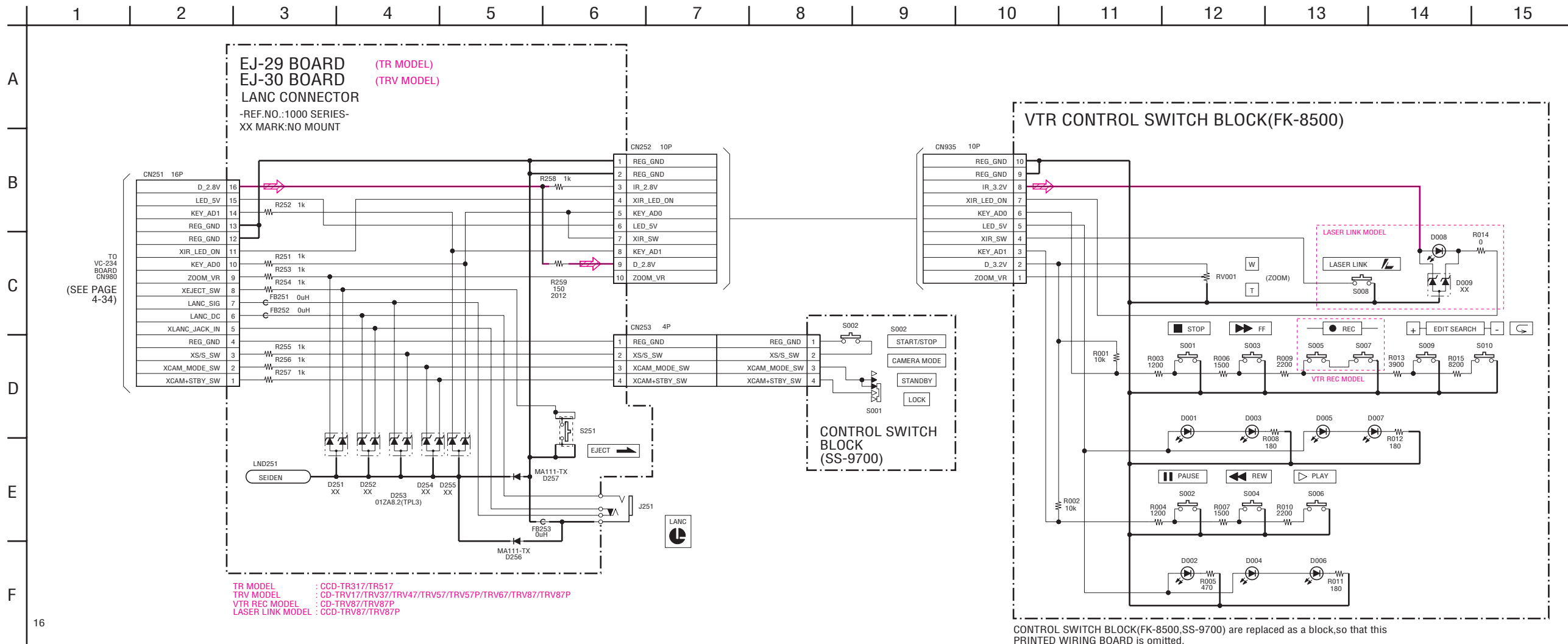


For printed wiring board
• Refer to page 4-100 for location.
• Chip parts



There are few cases that the part printed on this diagram isn't mounted in this model.





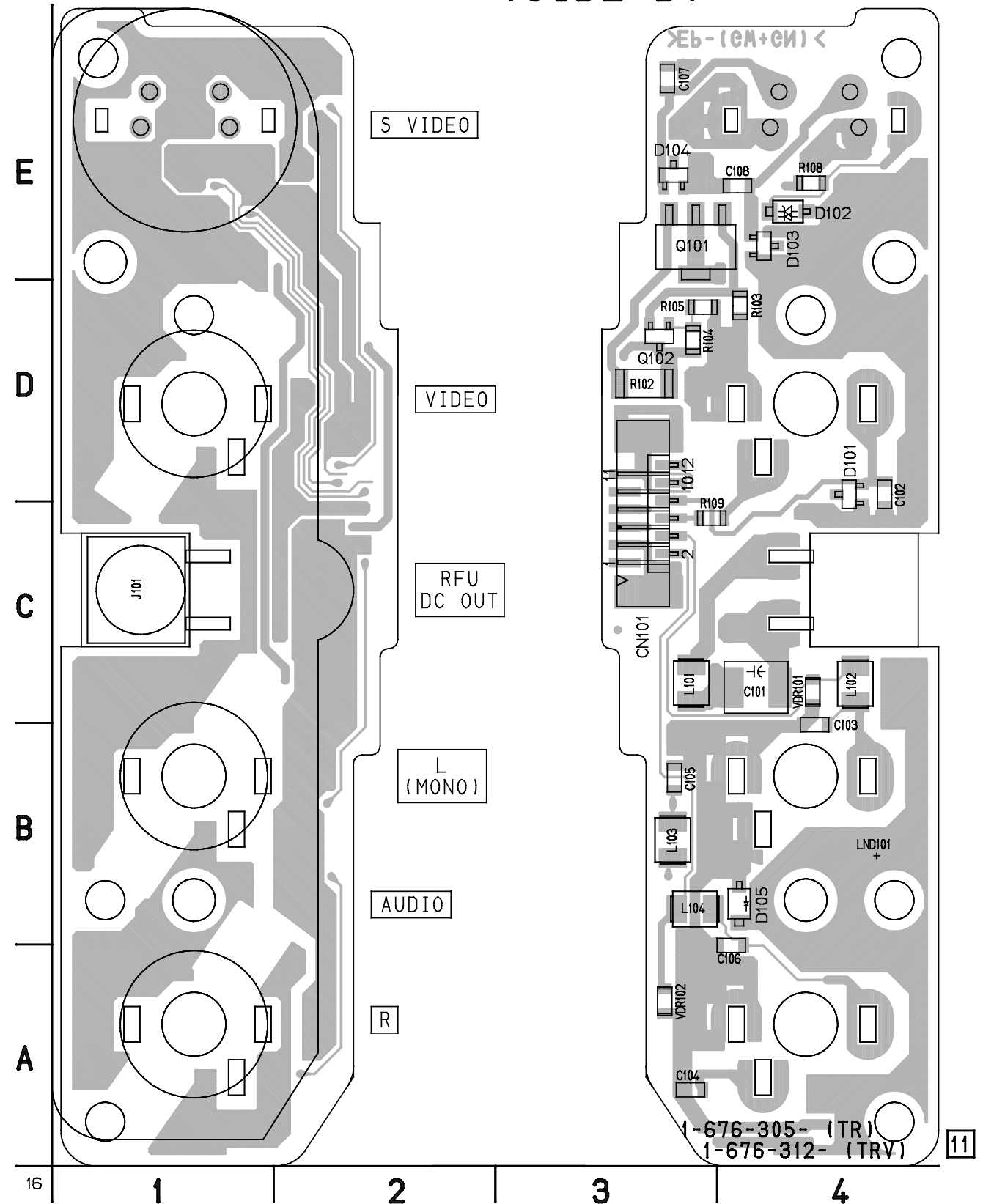
CONTROL SWITCH BLOCK(FK-8500,SS-9700) are replaced as a block,so that this PRINTED WIRING BOARD is omitted.

PJ-99/100 (AV IN/OUT) PRINTED WIRING BOARD

— Ref. No. PJ-99/100 Board; 1,000 Series —

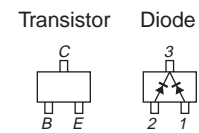
PJ-99 BOARD (TR MODEL)
PJ-100 BOARD (TRV MODEL)
(SIDE A)

PJ-99 BOARD (TR MODEL)
PJ-100 BOARD (TRV MODEL)
(SIDE B)

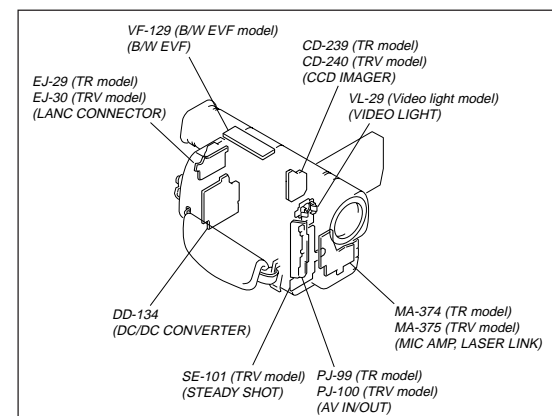


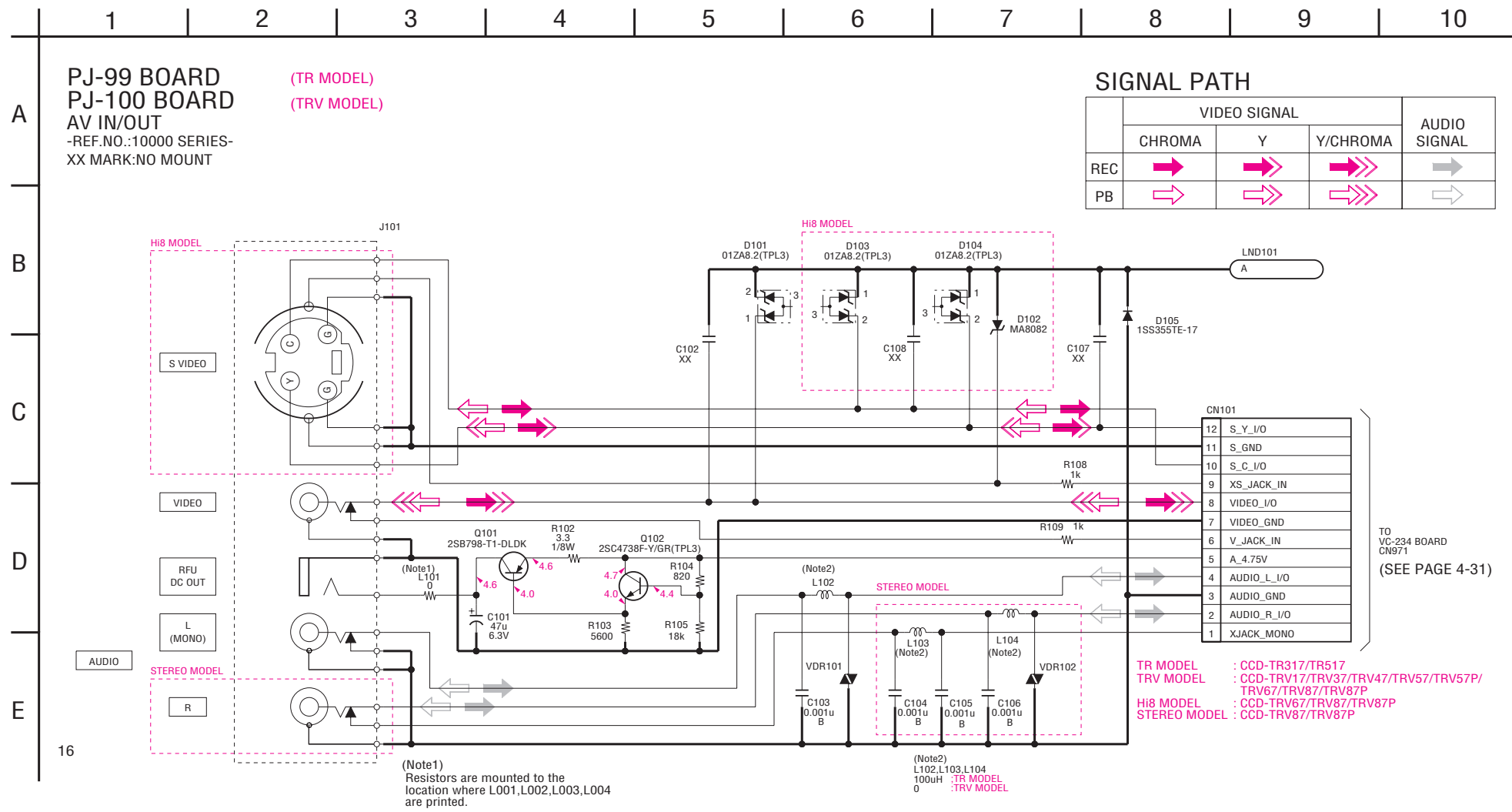
For printed wiring board

- Refer to page 4-100 for location.
- Chip parts



There are few cases that the part printed on this diagram isn't mounted in this model.

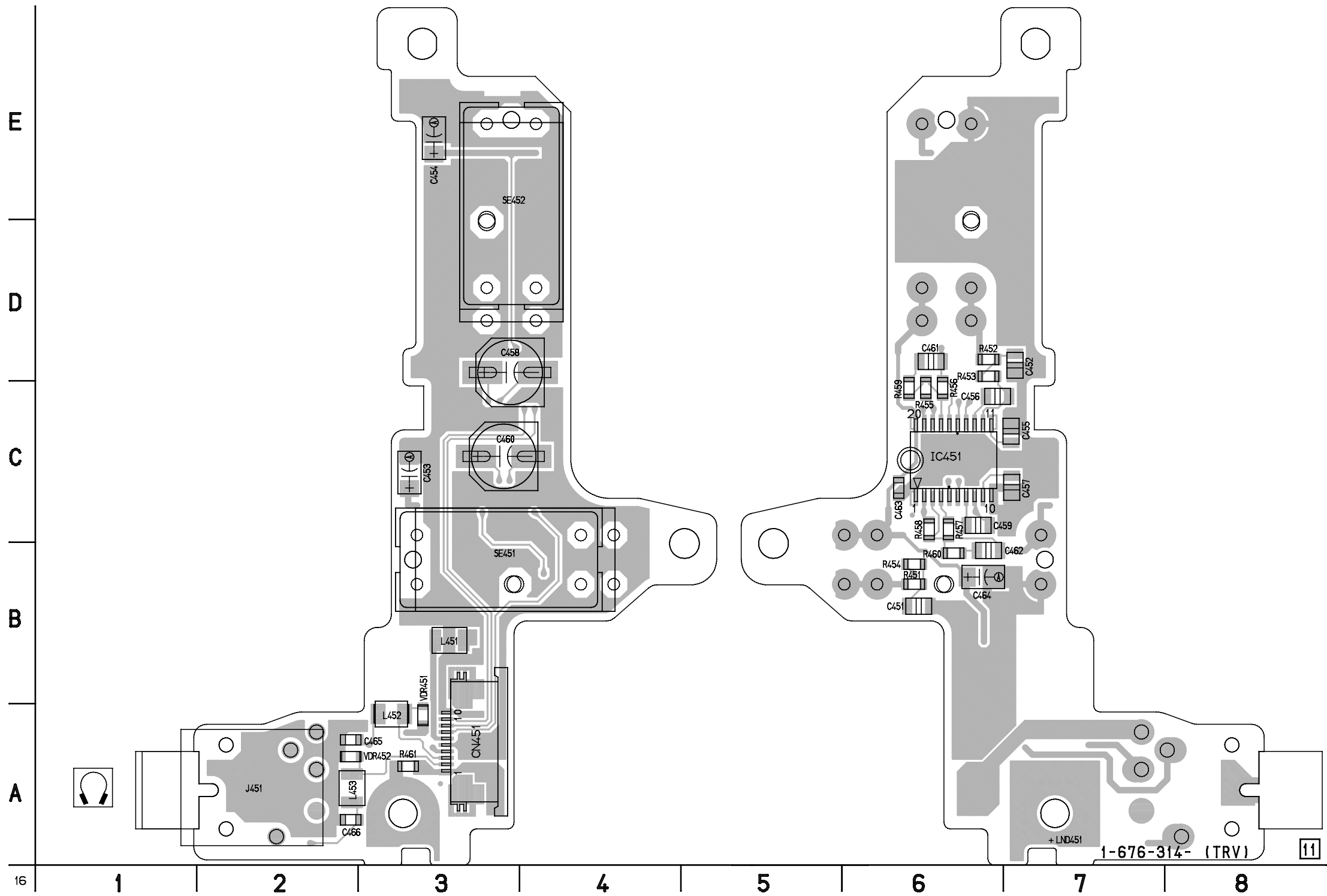




SE-101 (STEADY SHOT) PRINTED WIRING BOARD
— Ref. No. SE-101 Board; 1,000 Series —

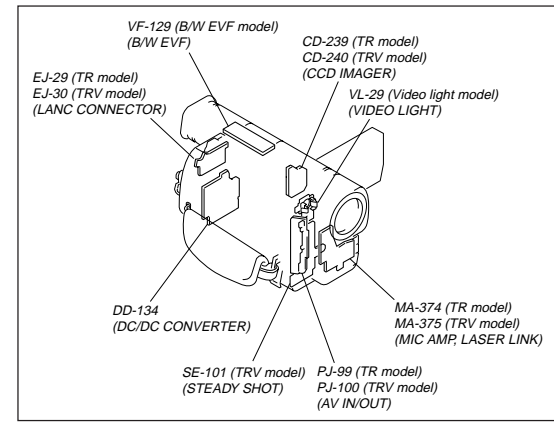
SE-101 BOARD (SIDE A) (TRV MODEL)

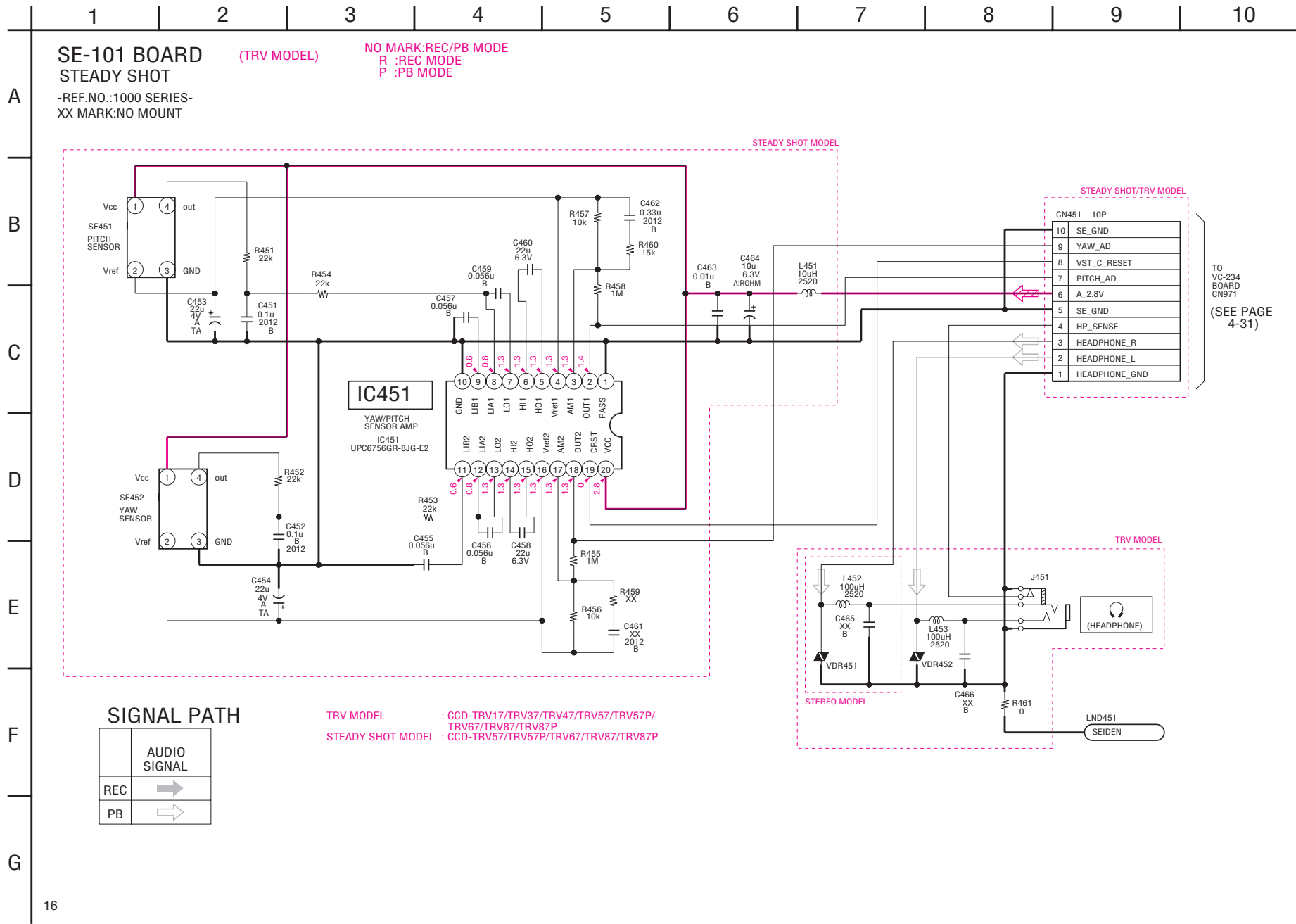
SE-101 BOARD (SIDE B) (TRV MODEL)



For printed wiring board
• Refer to page 4-100 for location.

There are few cases that the part printed on this diagram isn't mounted in this model.



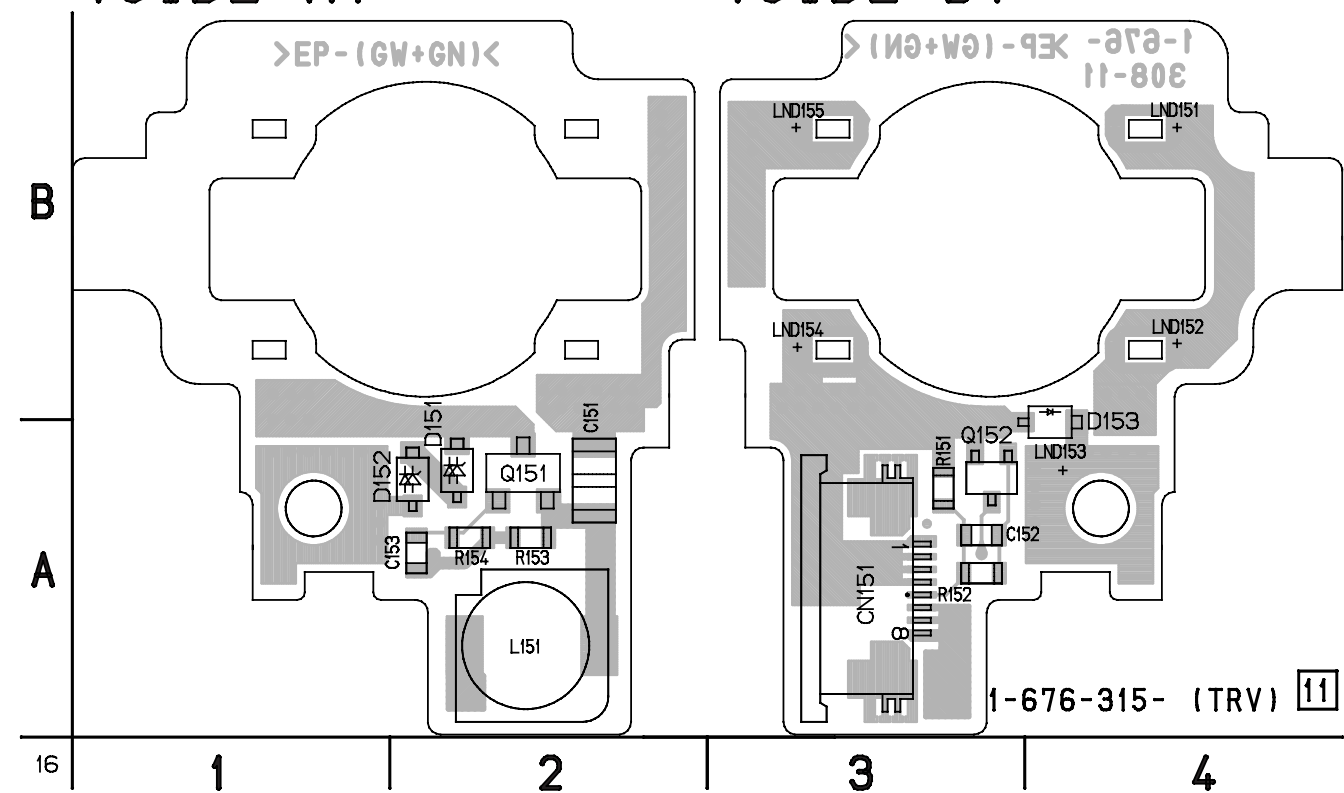


VL-29 (VIDEO LIGHT) PRINTED WIRING BOARD

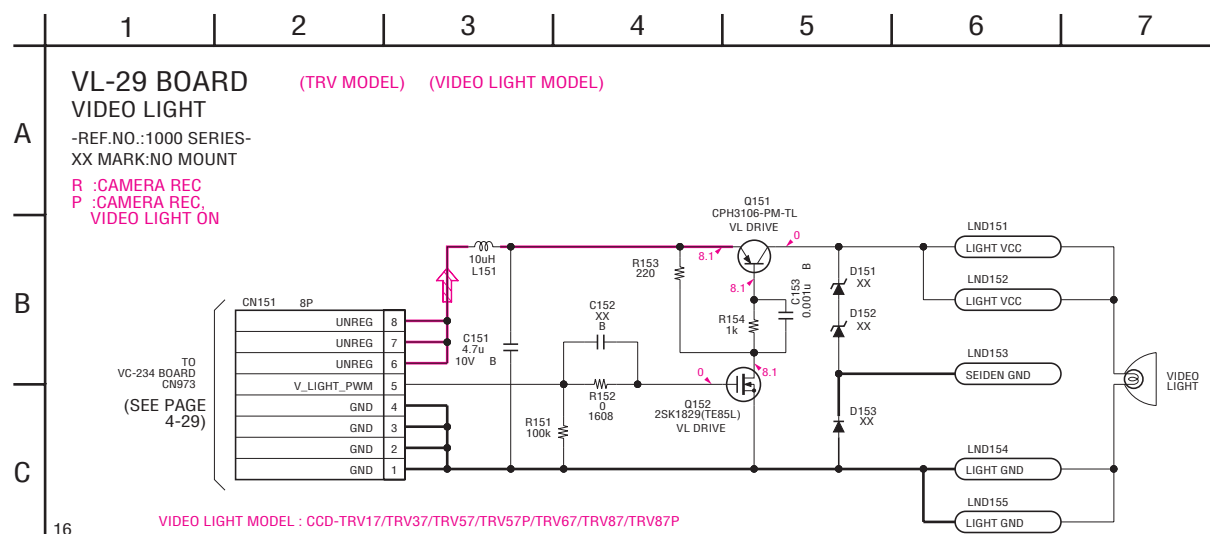
— Ref. No. VL-29 Board; 1,000 Series —

VL-29 BOARD (TRV MODEL)
(SIDE A)

VL-29 BOARD (TRV MODEL)
(SIDE B)



1-676-315- (TRV) 11



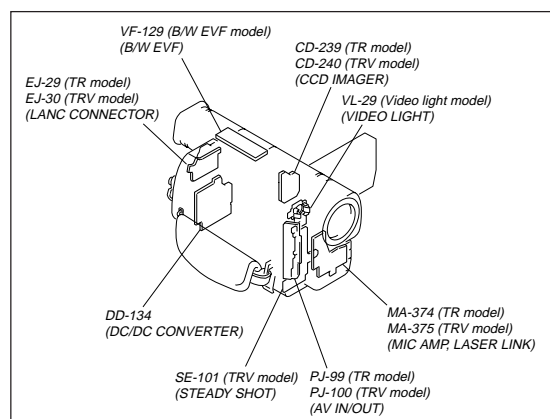
For printed wiring board

- Refer to page 4-101 for location.
- Chip parts

Transistor



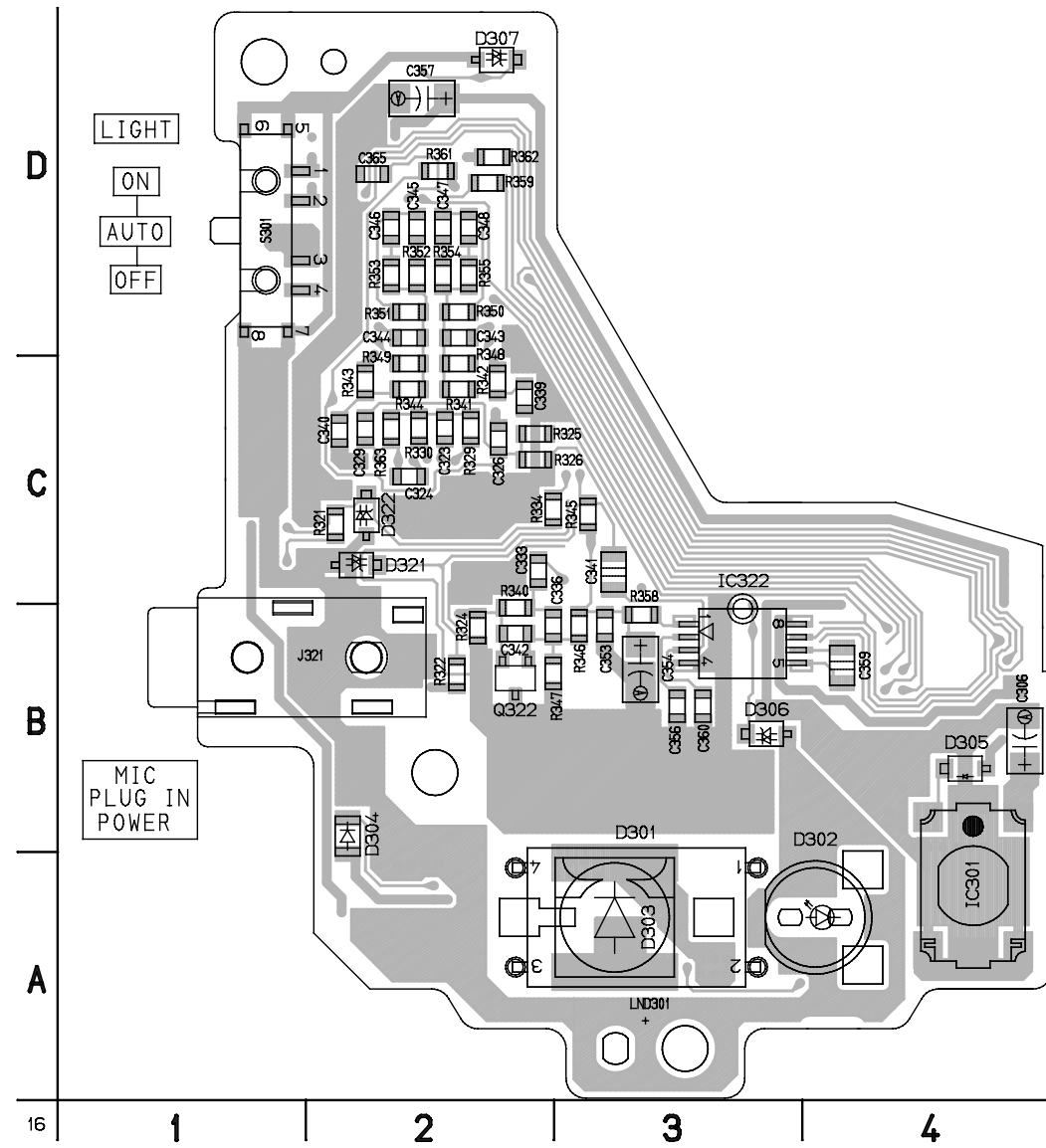
There are few cases that the part printed on this diagram isn't mounted in this model.



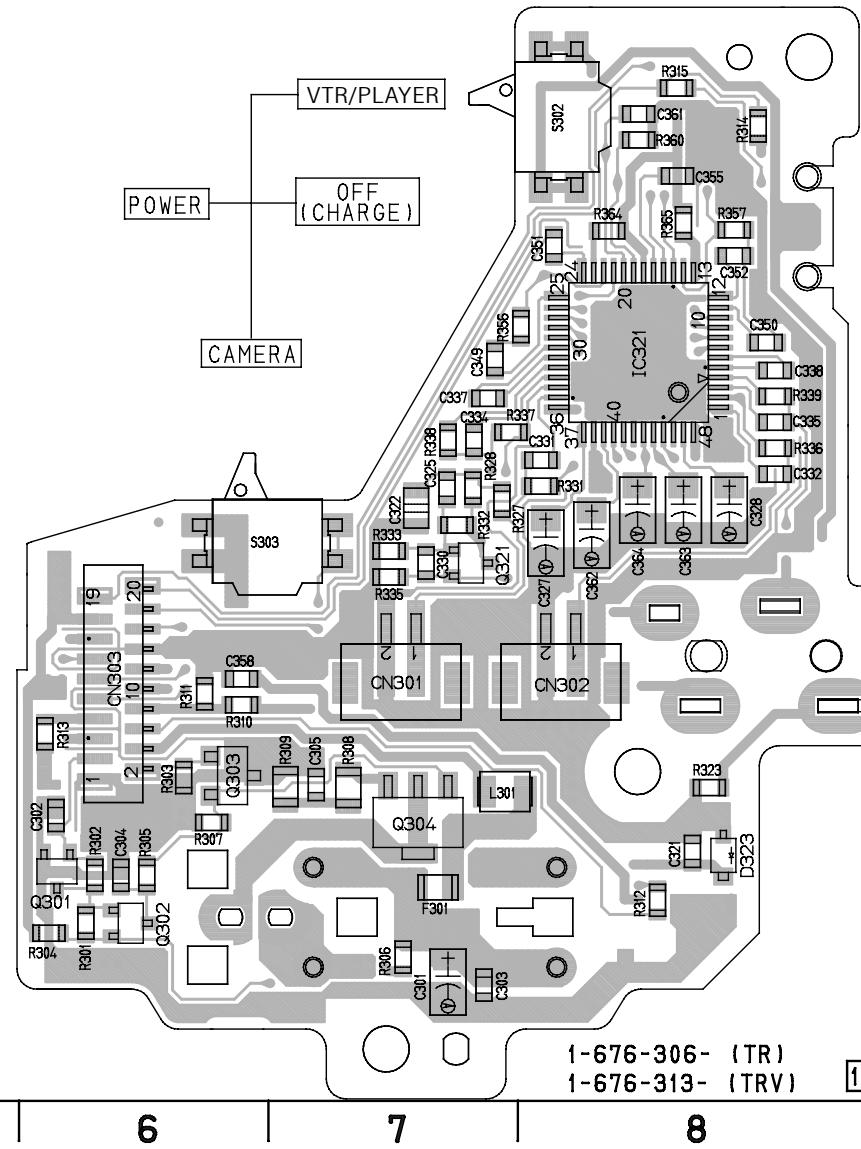
MA-374/375 (MIC AMP) PRINTED WIRING BOARD

— Ref. No. MA-374/375 Board; 1,000 Series —

MA-374 BOARD (SIDE A) (TR MODEL)
MA-375 BOARD (SIDE A) (TRV MODEL)

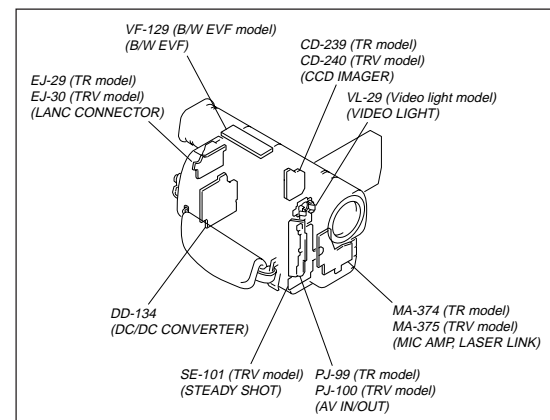


MA-374 BOARD (SIDE B) (TR MODEL)
MA-375 BOARD (SIDE B) (TRV MODEL)



1-676-306- (TR)
1-676-313- (TRV)

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For printed wiring board

- Refer to page 4-101 for location.
- Chip parts

Transistor

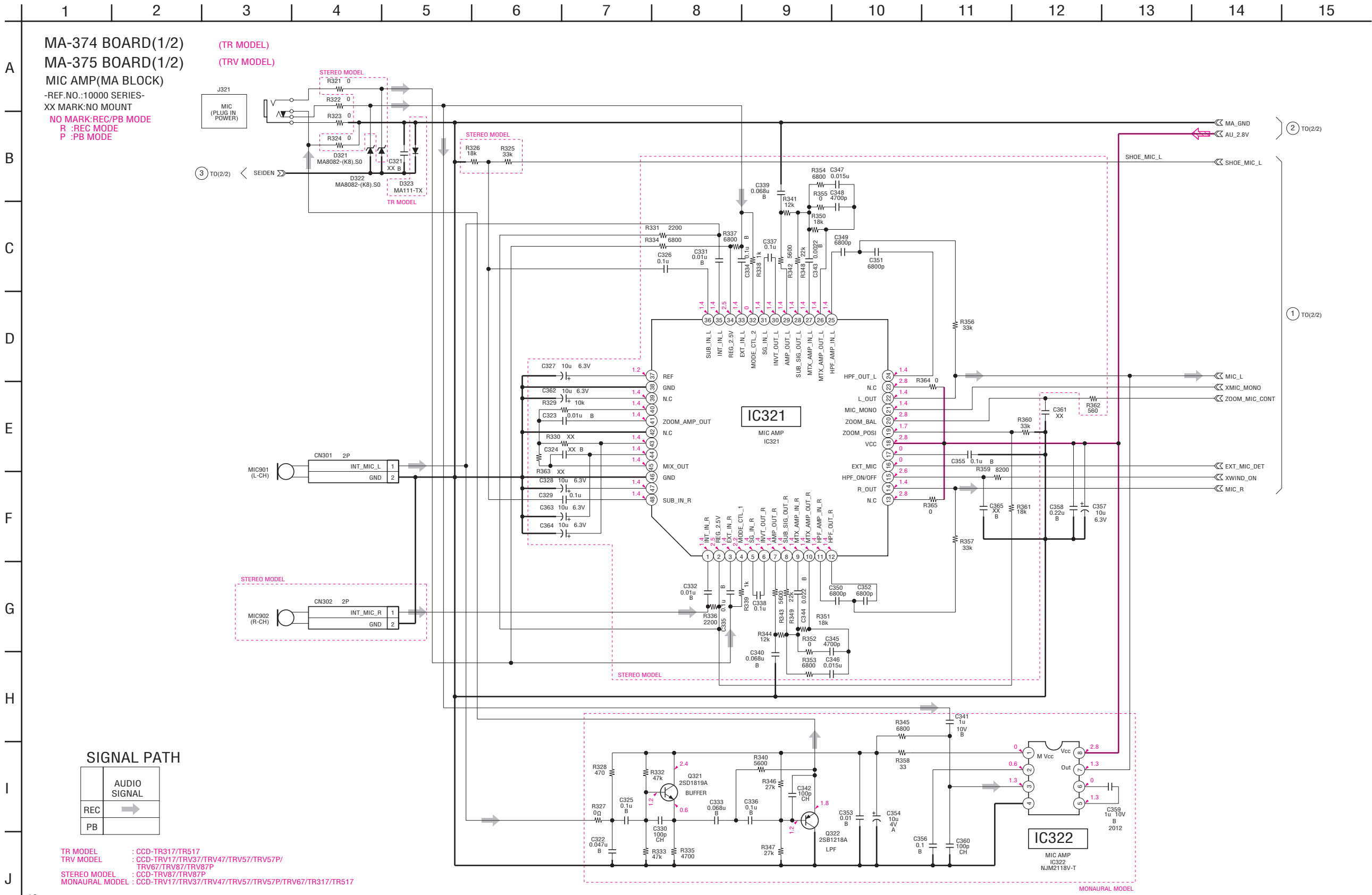


There are few cases that the part printed on this diagram isn't mounted in this model.

CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

For Schematic Diagram

• Refer to page 4-65 for printed wiring board.



SIGNAL PATH

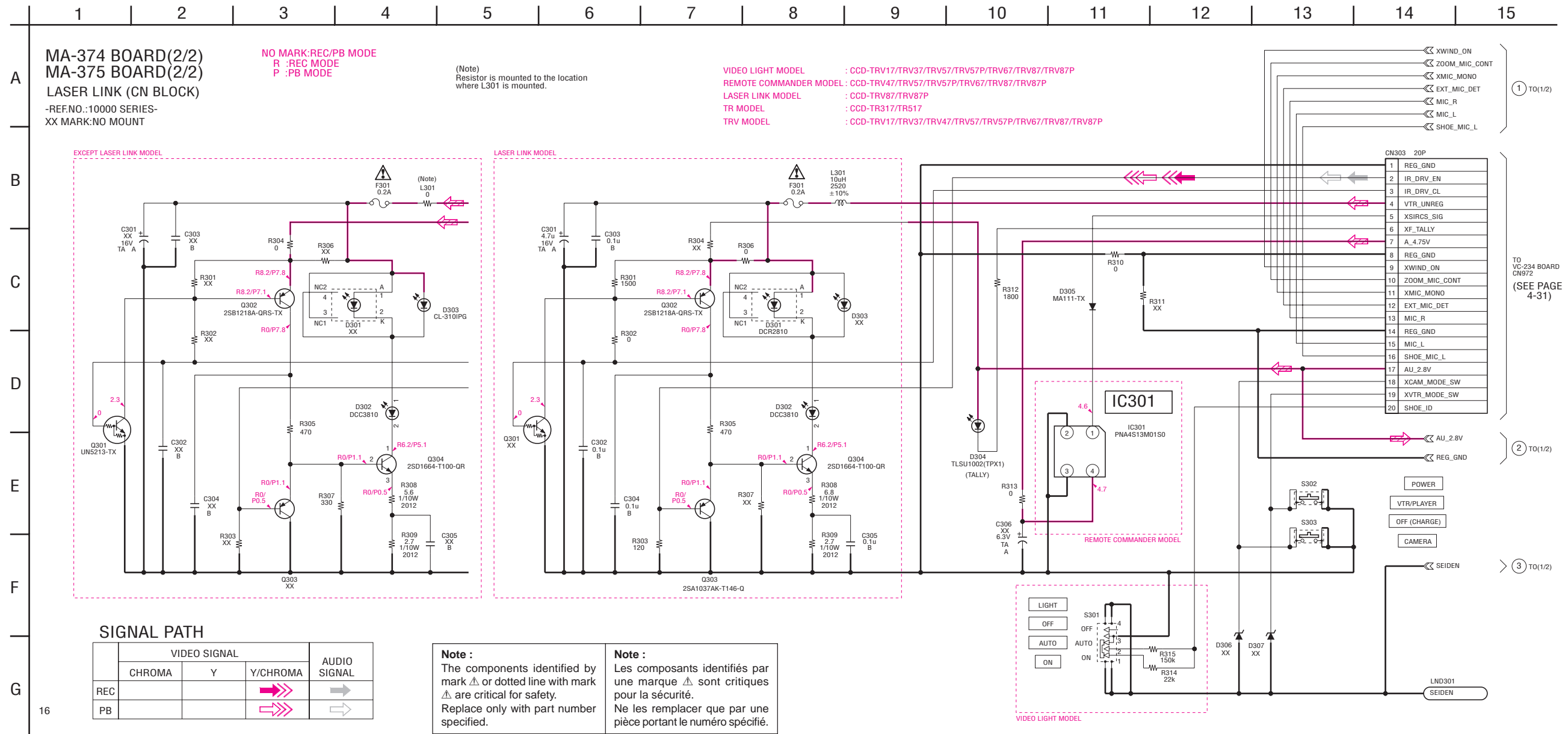
	AUDIO SIGNAL
REC	→
PB	

TR MODEL : CCD-TR317/TR517
 TRV MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/
 TRV67/TRV87/TRV87P
 STEREO MODEL : CCD-TRV87/TRV87P
 MONAURAL MODEL : CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TR317/TR517

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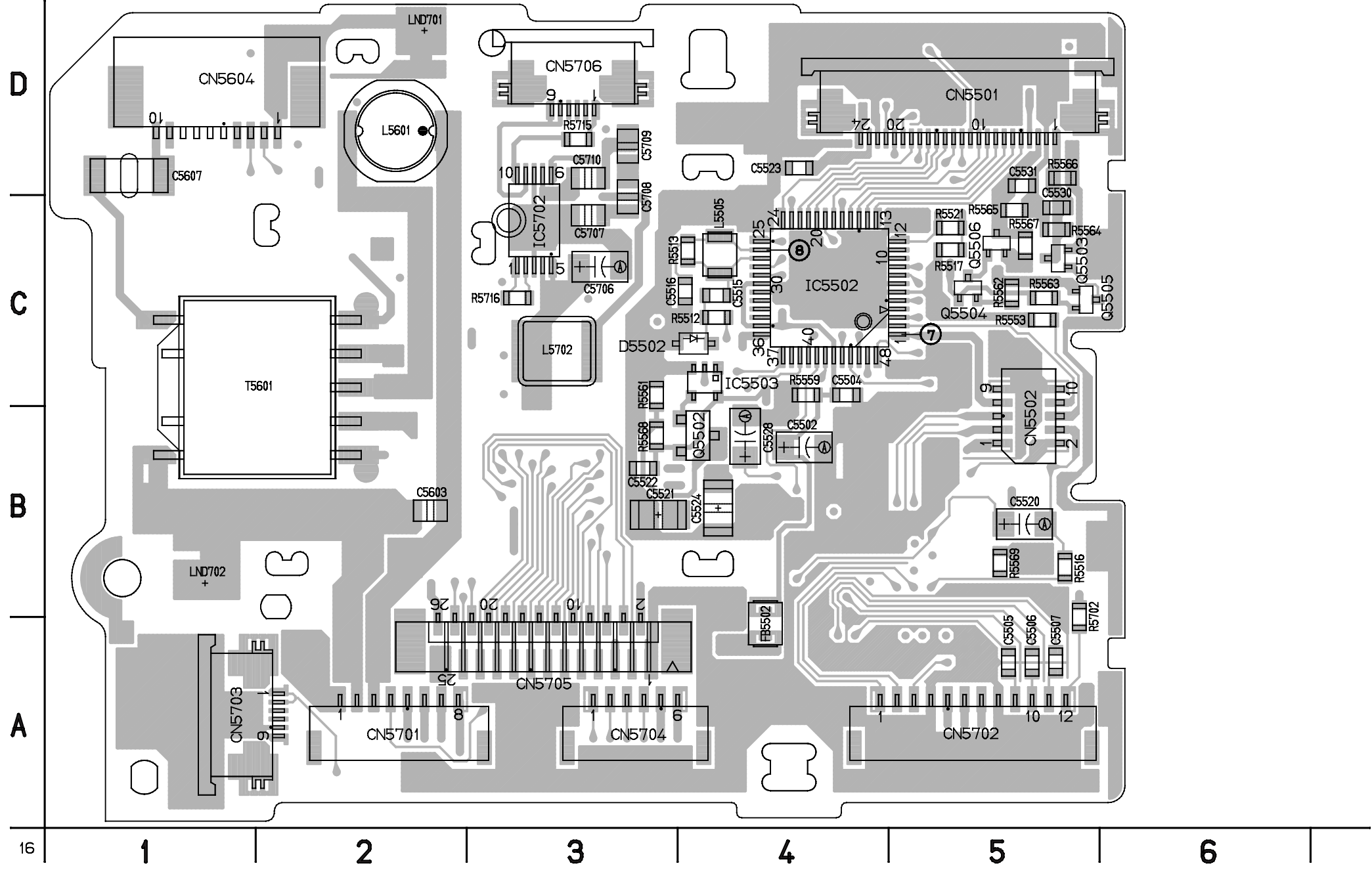
For Schematic Diagram

• Refer to page 4-65 for printed wiring board.

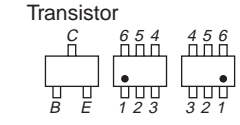


PD-117 (RGB LCD DRIVER, TIMING GENERATOR, CG LCD DRIVER, BACK LIGHT DRIVE) PRINTED WIRING BOARD
— Ref. No. PD-117 Board; 10,000 Series —

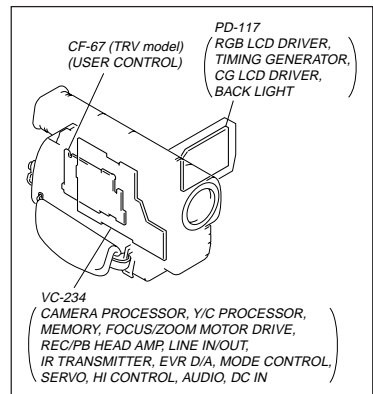
PD-117 BOARD (SIDE A)



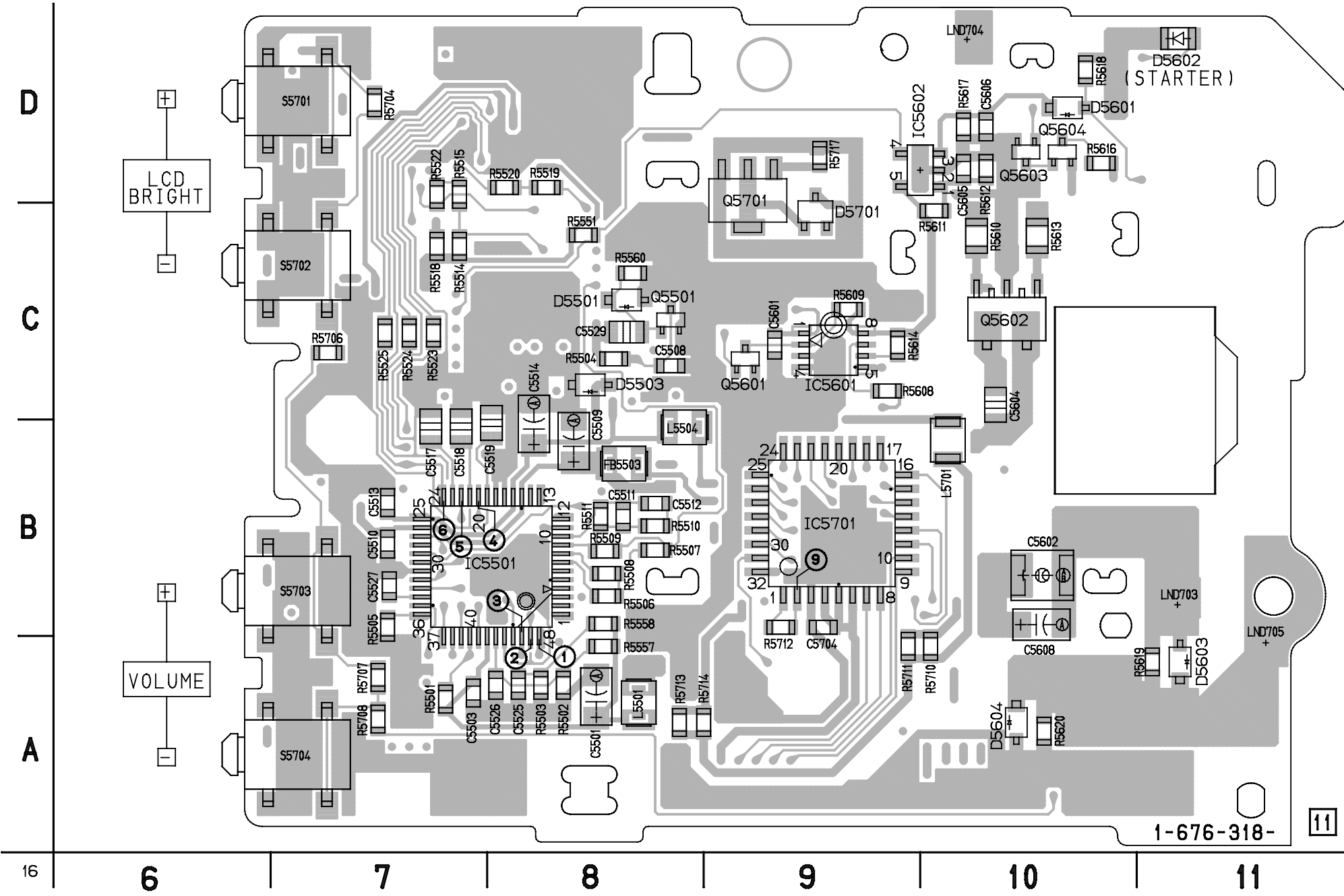
- For printed wiring board**
- Refer to page 4-101 for location.
 - This board is four-layer print board. However, the patterns of layers two and three have not been included in the diagram.
 - Chip parts



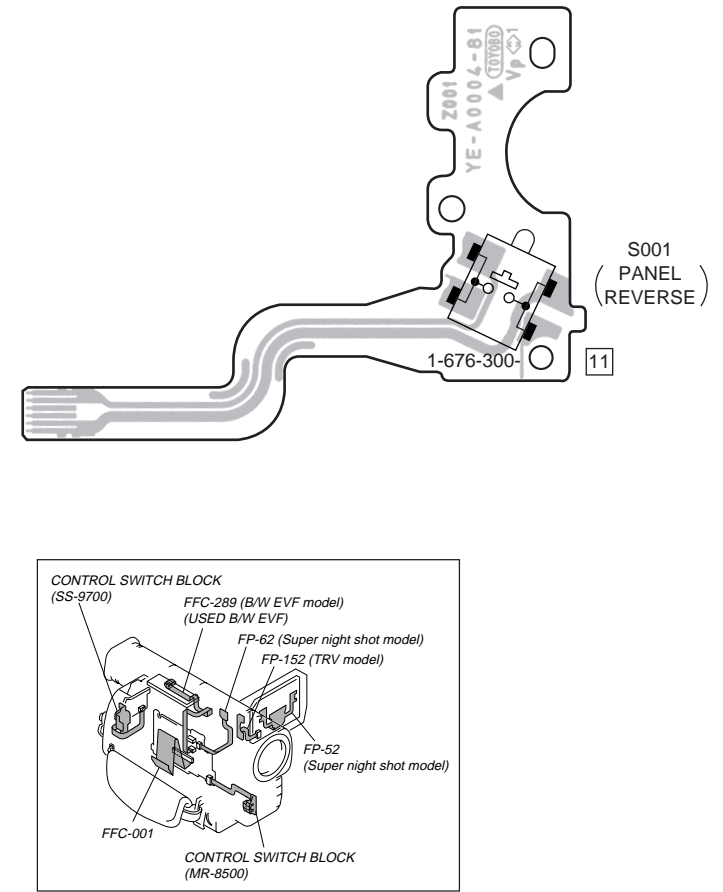
There are few cases that the part printed on this diagram isn't mounted in this model.



PD-117 BOARD (SIDE B)



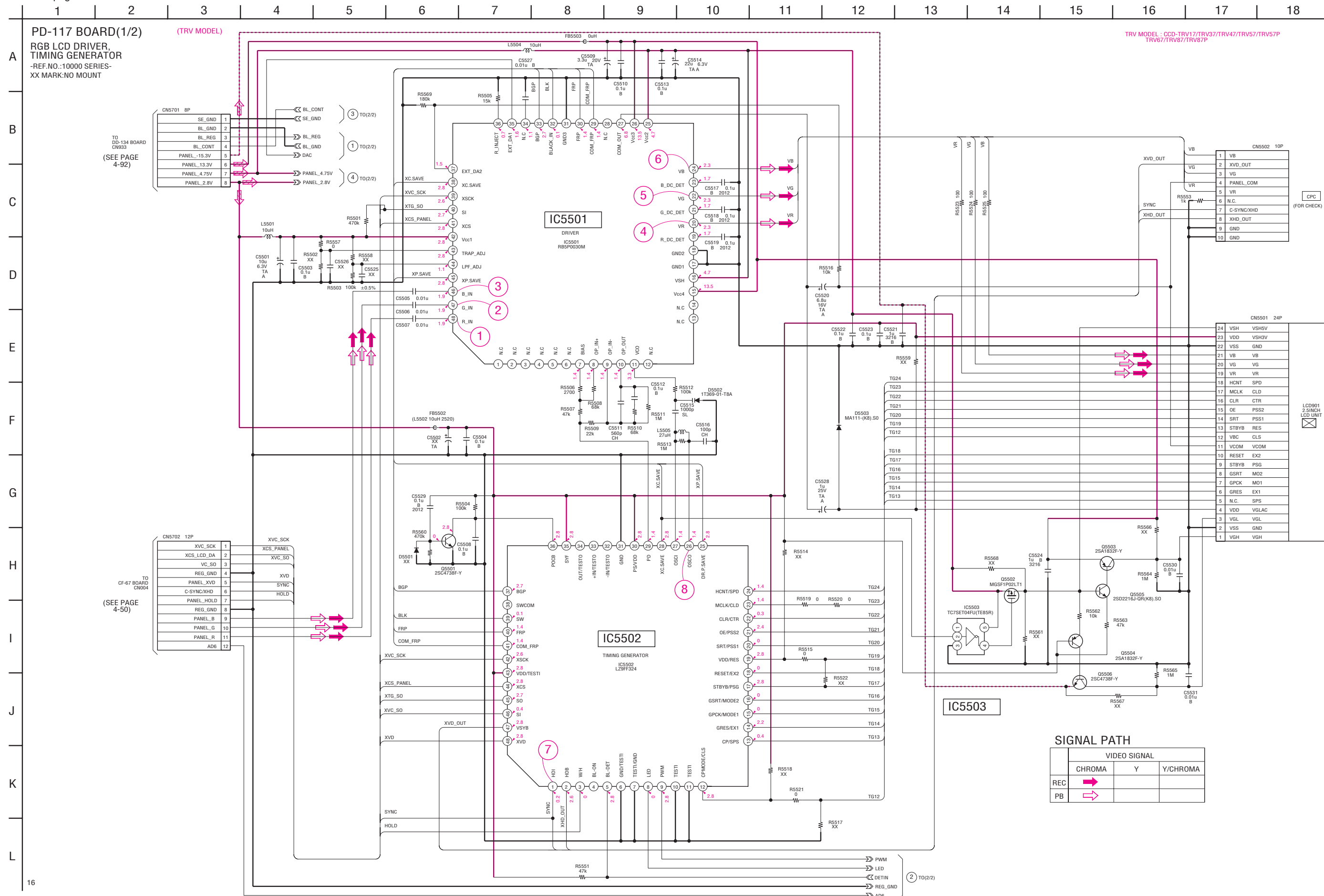
FP-152 FLEXIBLE BOARD



CCD-TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67/TRV87/TRV87P

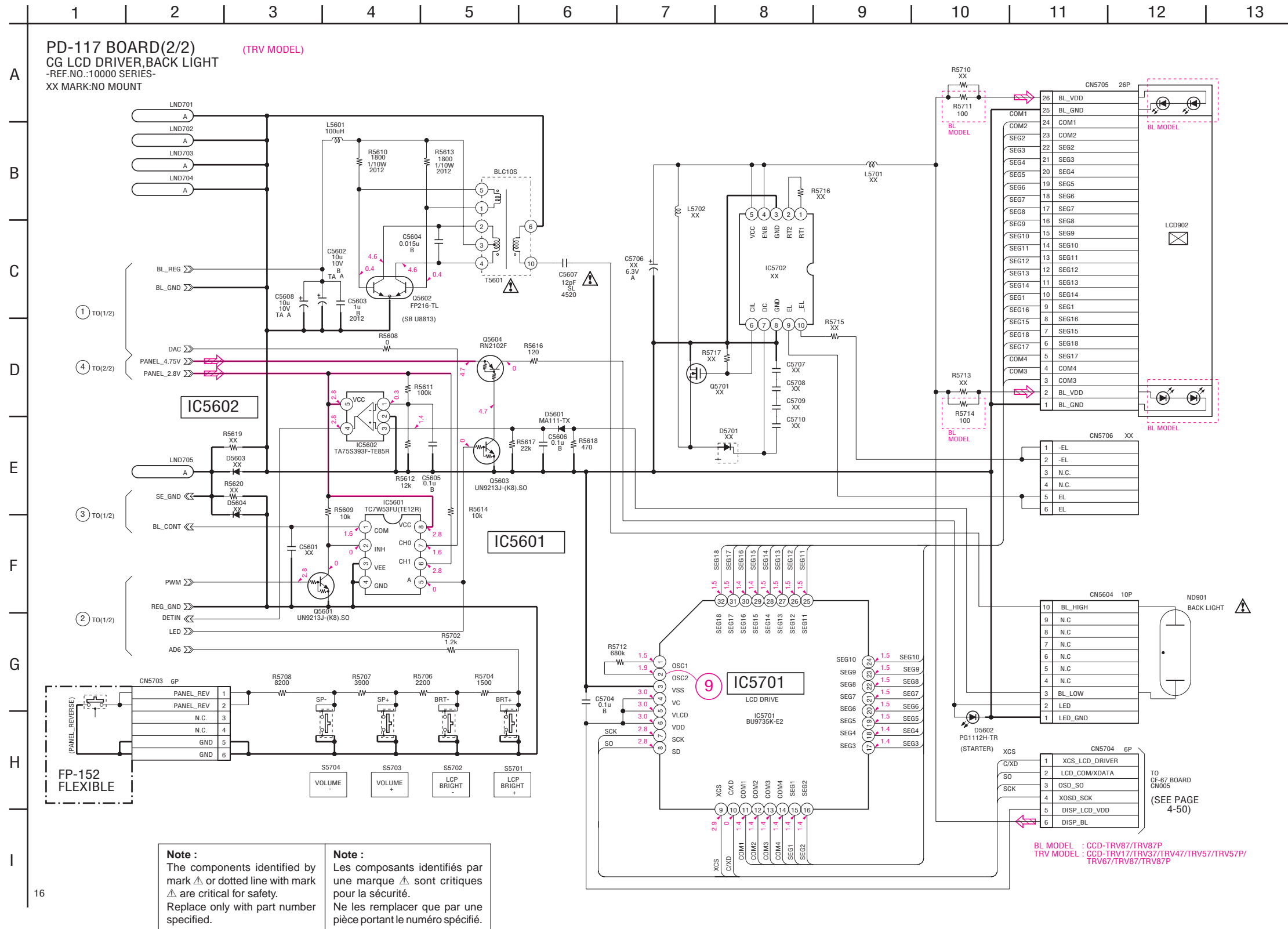
For Schematic Diagram

- Refer to page 4-71 for printed wiring board.
- Refer to page 4-96 for waveforms.



For Schematic Diagram

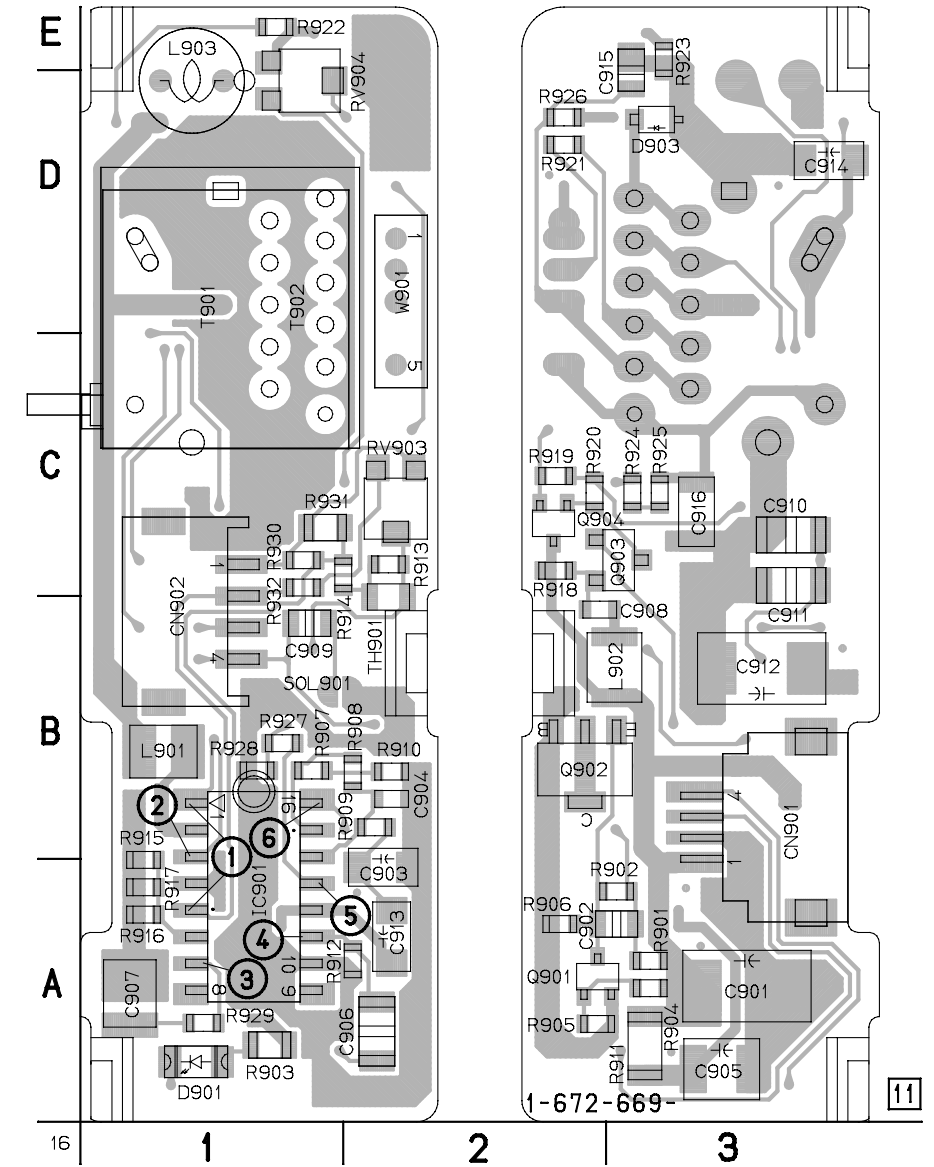
- Refer to page 4-71 for printed wiring board.
- Refer to page 4-96 for waveform.



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VF-129 (B/W EVF) PRINTED WIRING BOARD
— Ref. No. VF-129 Board; 1,000 Series —

VF-129 BOARD VF-129 BOARD
(SIDE A) (SIDE B)



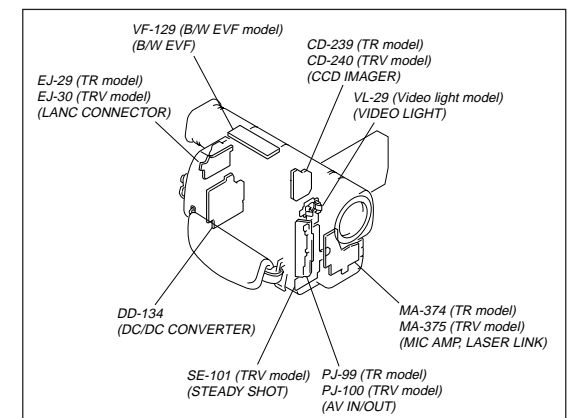
For printed wiring board

- Refer to page 4-102 for location.
- Chip parts

Transistor

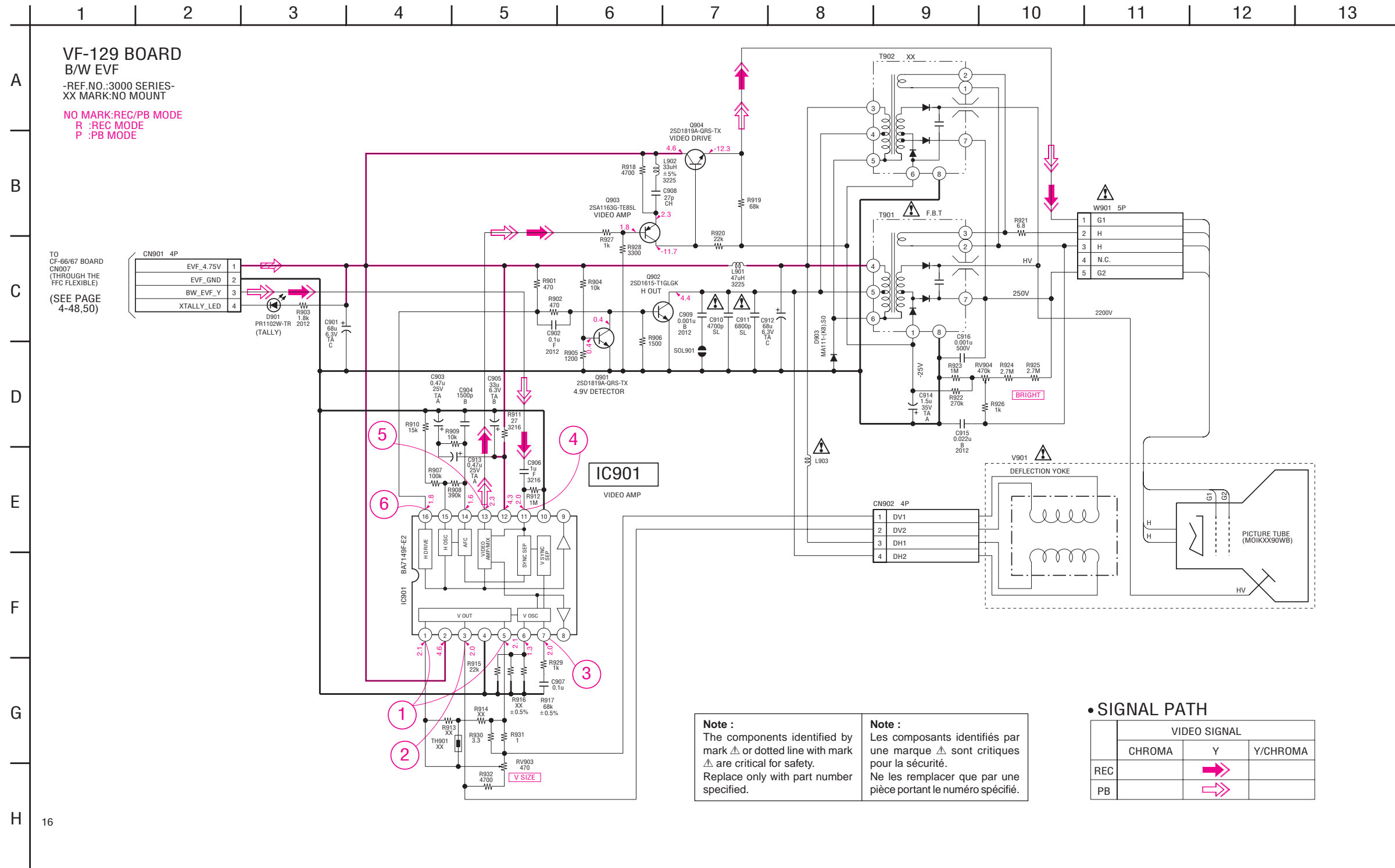


There are few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

• Refer to page 4-96 for waveforms.



Note :
The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

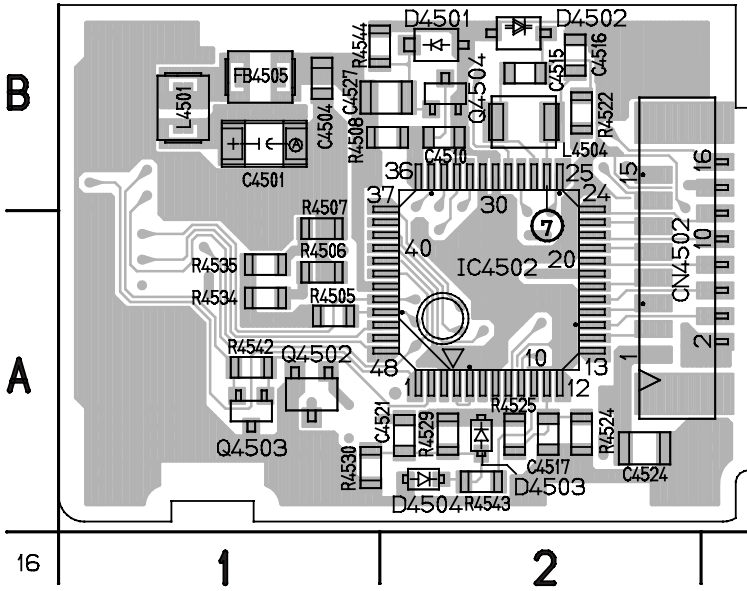
Note :
Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

• SIGNAL PATH

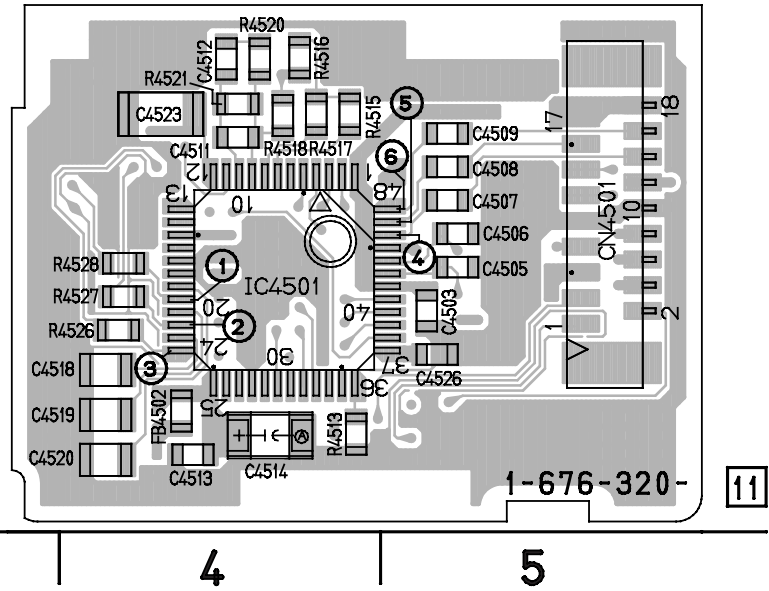
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		→	
PB		→	

VF-141 (RGB DRIVER, TG) PRINTED WIRING BOARD
— Ref. No. VF-141 Board; 10,000 Series —

**VF-141 BOARD
(SIDE A)**



**VF-141 BOARD
(SIDE B)**



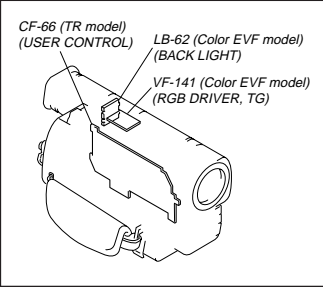
For printed wiring board

- Refer to page 4-102 for location.
- This board is four-layer print board. However, the patterns of layers two and three have not been included in the diagram.
- Chip parts

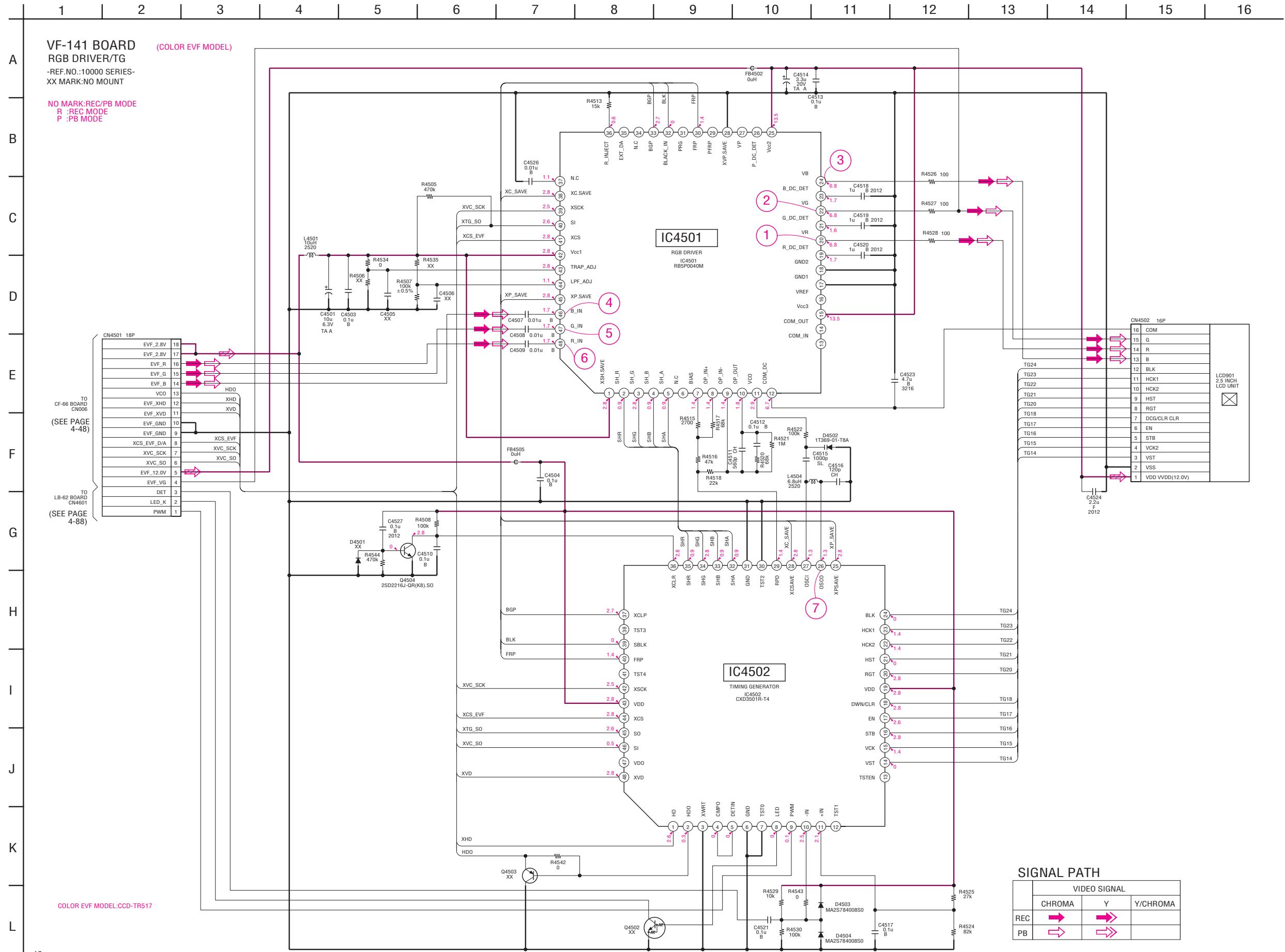
Transistor



There are few cases that the part printed on this diagram isn't mounted in this model.

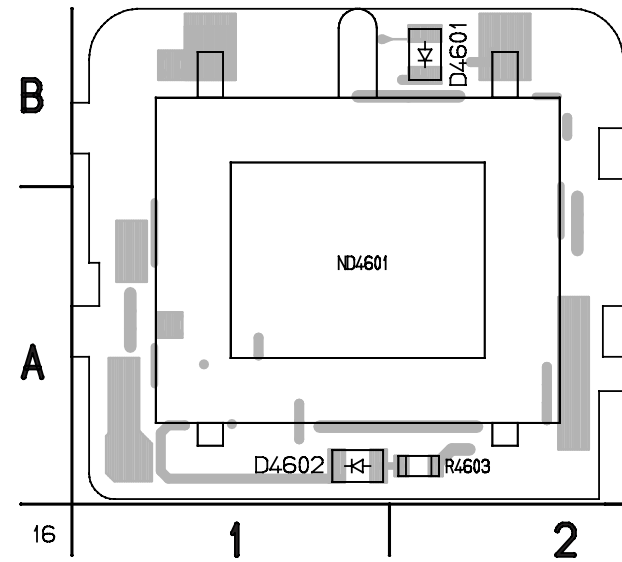


For Schematic Diagram
• Refer to page 4-96 for waveforms.

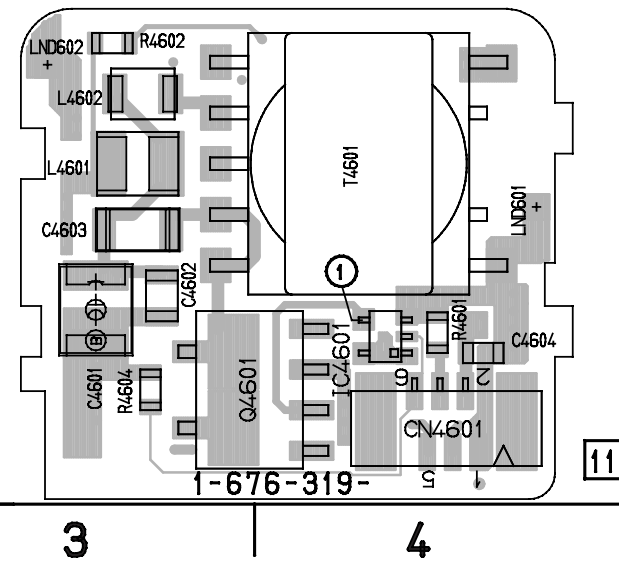


LB-62 (BACK LIGHT) PRINTED WIRING BOARD
— Ref. No. LB-62 Board; 10,000 Series —

**LB-62 BOARD
(SIDE A)**



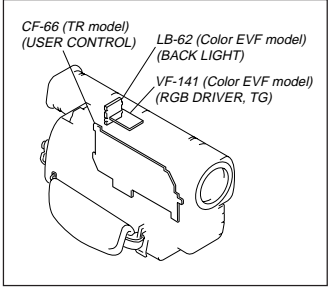
**LB-62 BOARD
(SIDE B)**



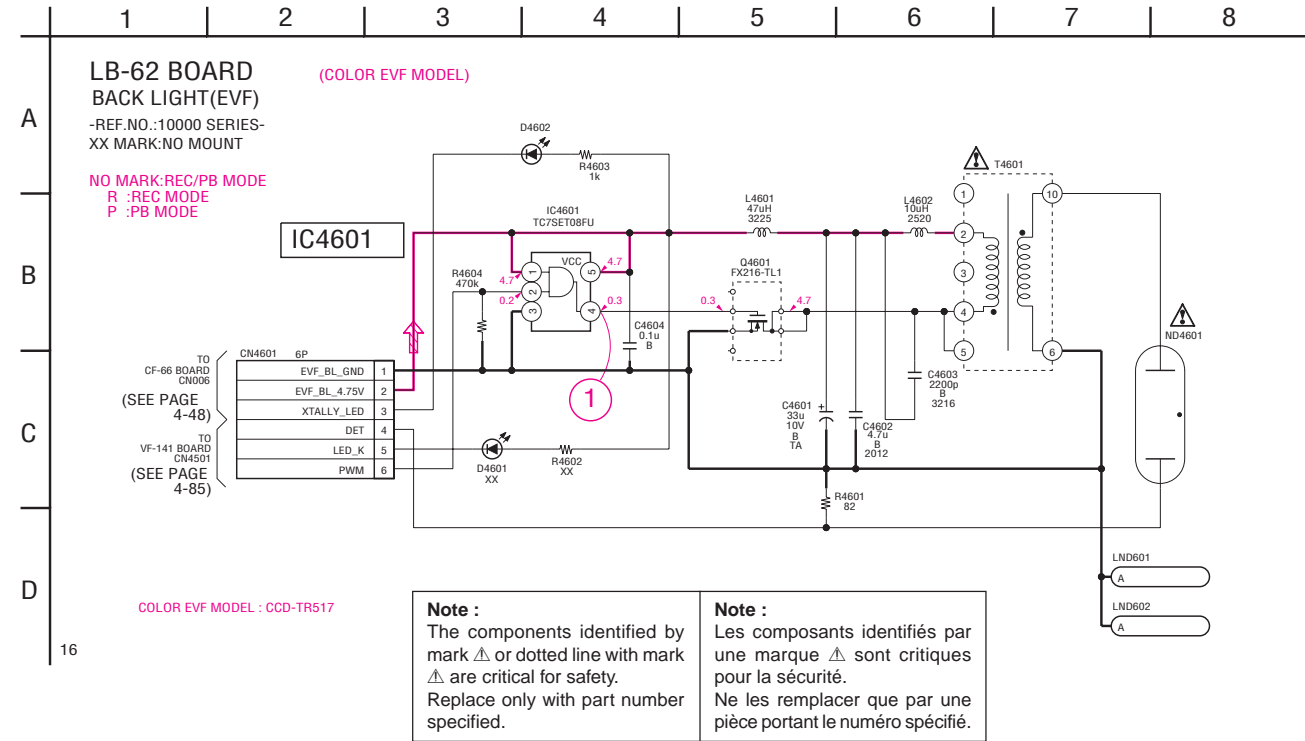
For printed wiring board

- Refer to page 4-102 for location.
- This board is four-layer print board. However, the patterns of layers two and three have not been included in the diagram.

There are few cases that the part printed on this diagram isn't mounted in this model.



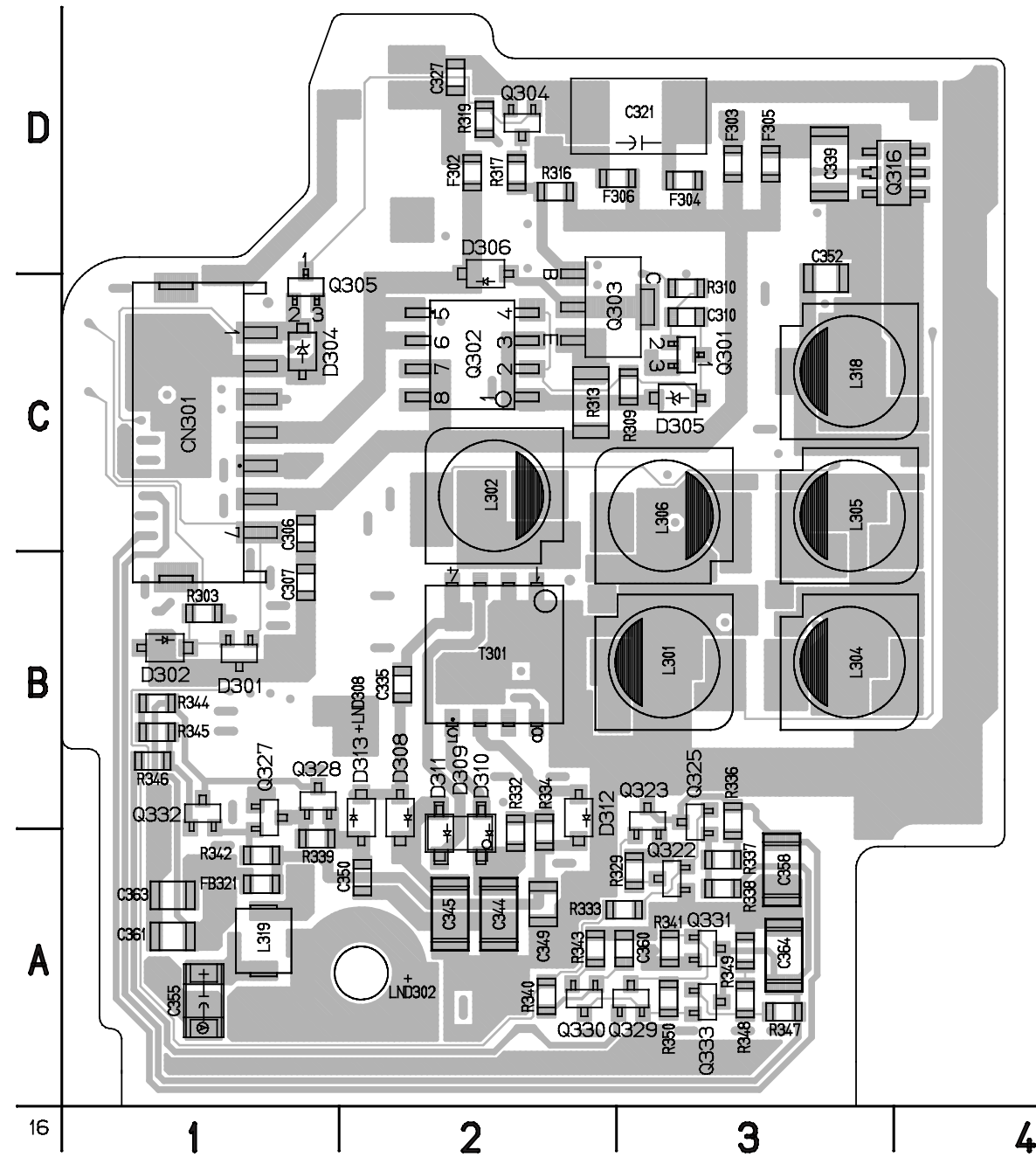
For Schematic Diagram
• Refer to page 4-97 for waveform.



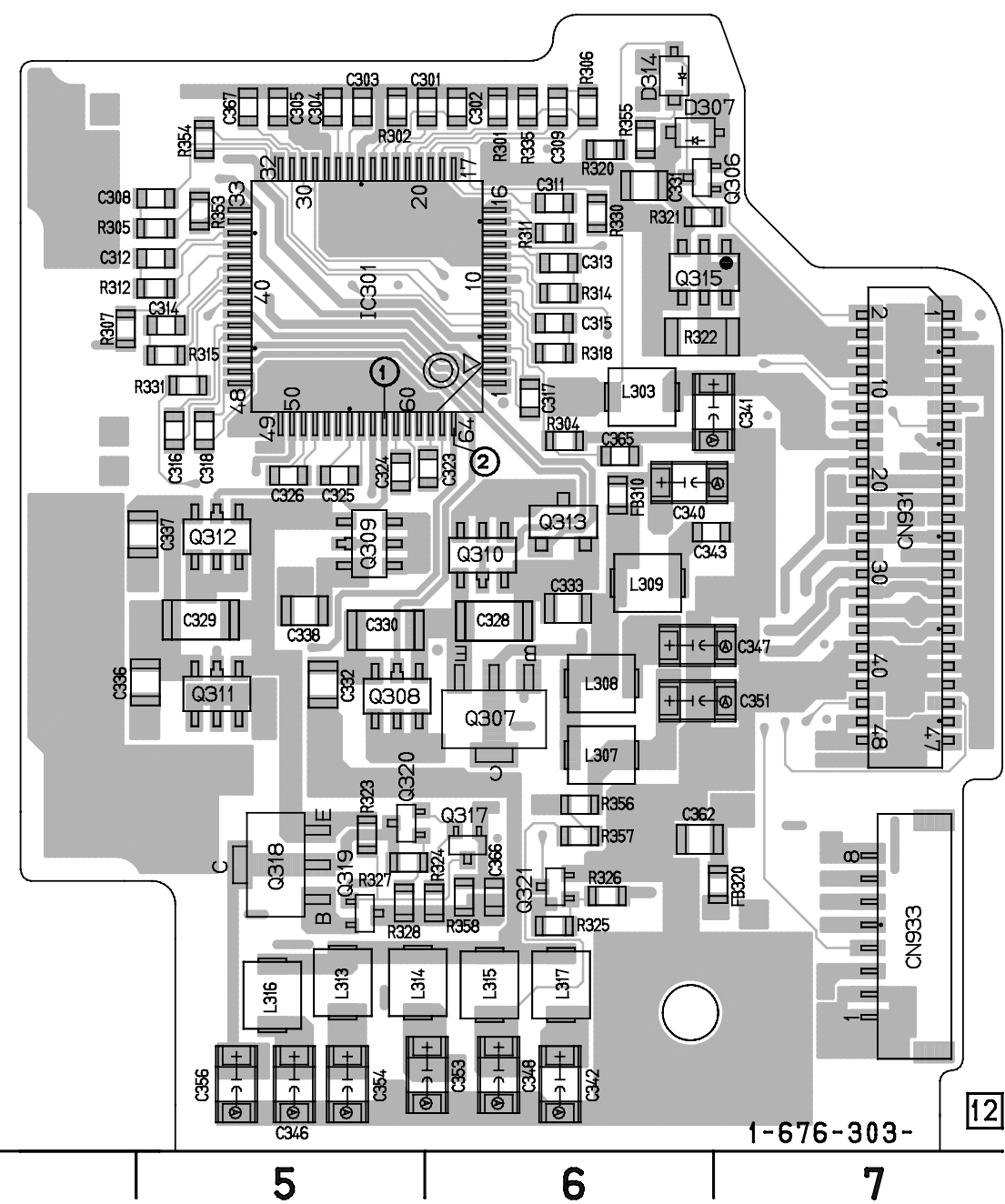
DD-134 (DC/DC CONVERTER) PRINTED WIRING BOARD

— Ref. No. DD-134 Board; 1,000 Series —

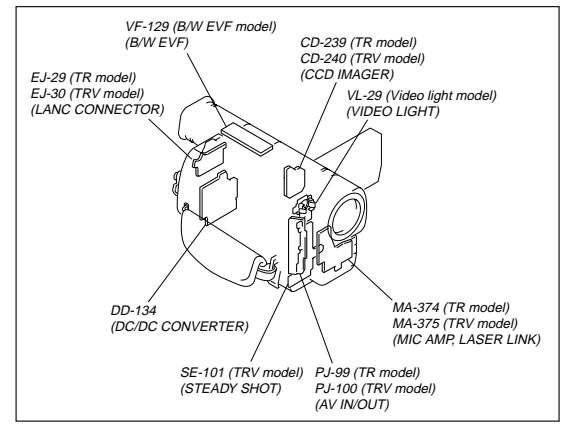
DD-134 BOARD (SIDE A)



DD-134 BOARD (SIDE B)



1-676-303- [12]



For printed wiring board

- Refer to page 4-103 for location.
- This board is four-layer print board. However, the patterns of layers two and three have not been included in the diagram.
- Chip parts

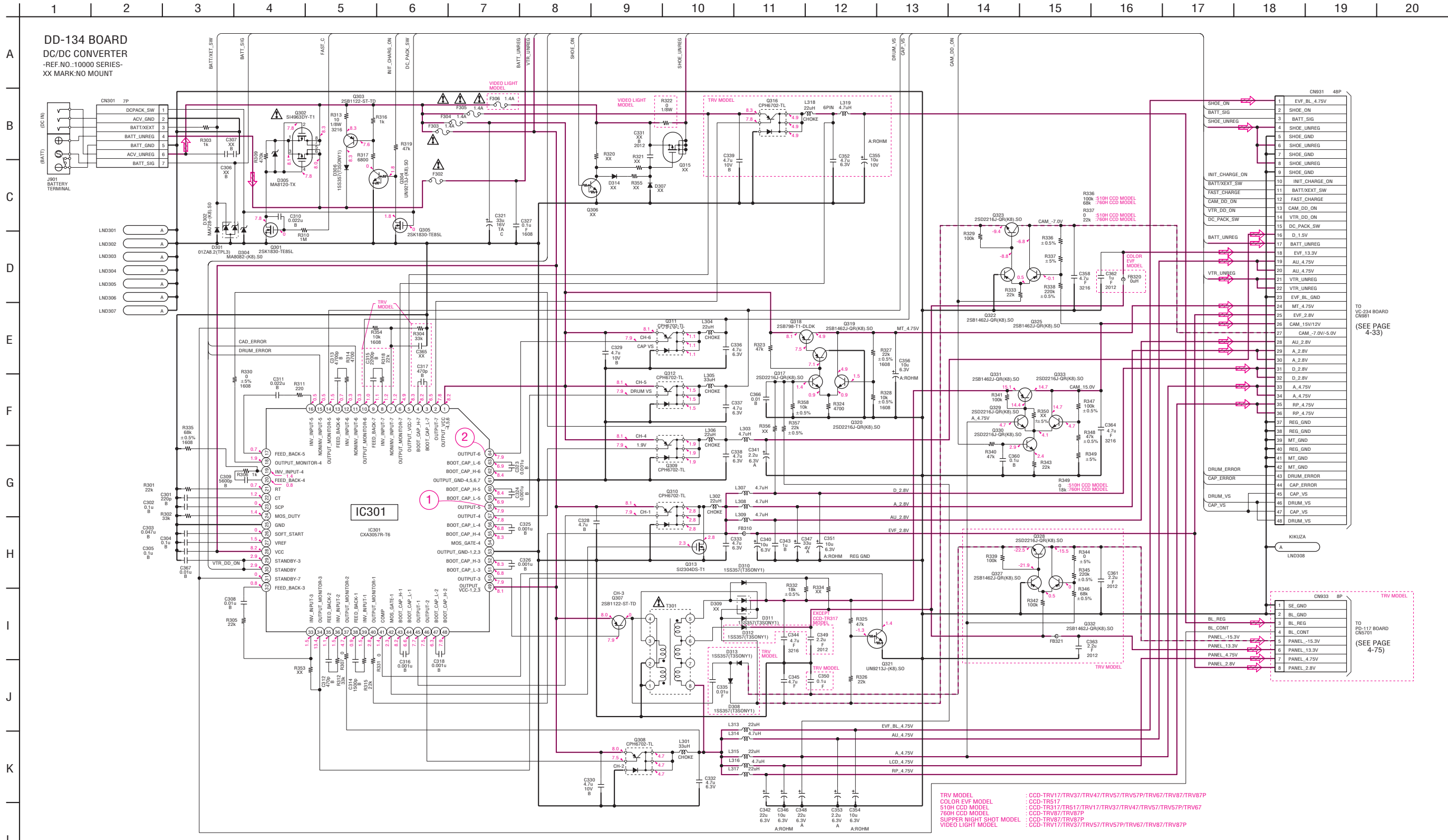
Transistor

There are few cases that the part printed on this diagram isn't mounted in this model.

CCD-TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67/TRV87/TRV87P

For Schematic Diagram

- Refer to page 4-89 for printed wiring board.
- Refer to page 4-97 for waveforms.

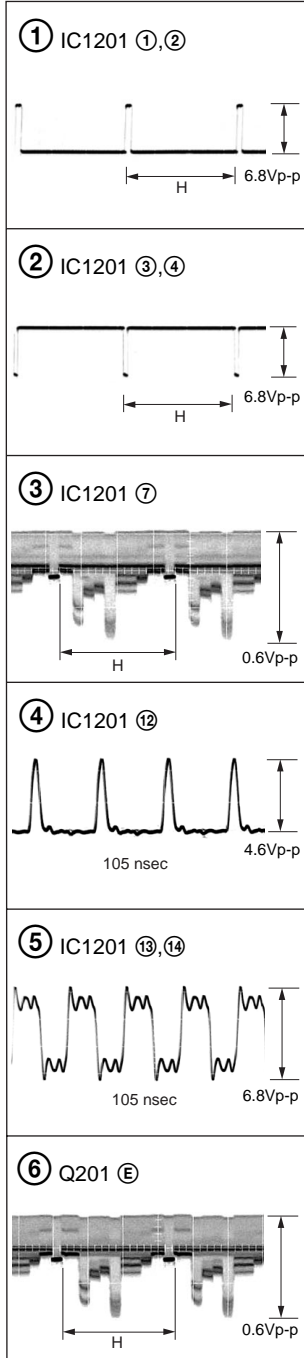


Note :
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

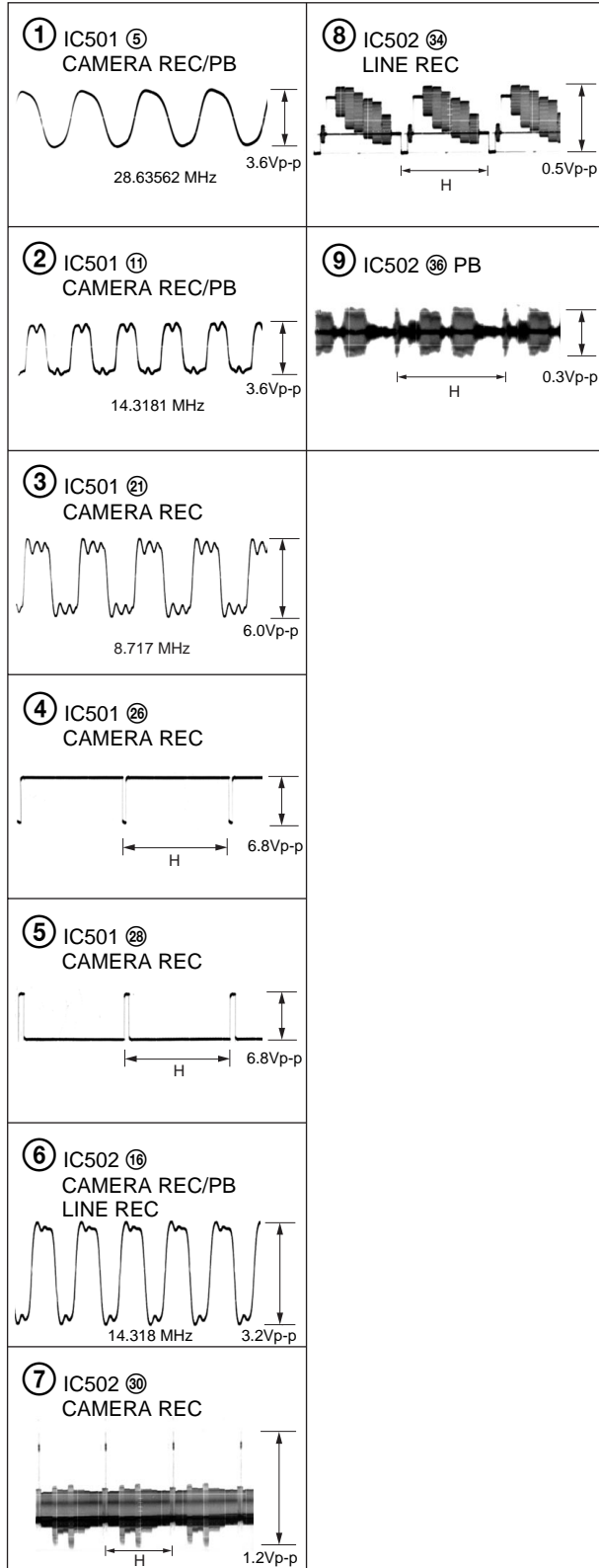
Note :
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-3. WAVEFORMS

CD-239/240 BOARD
CAMERA REC

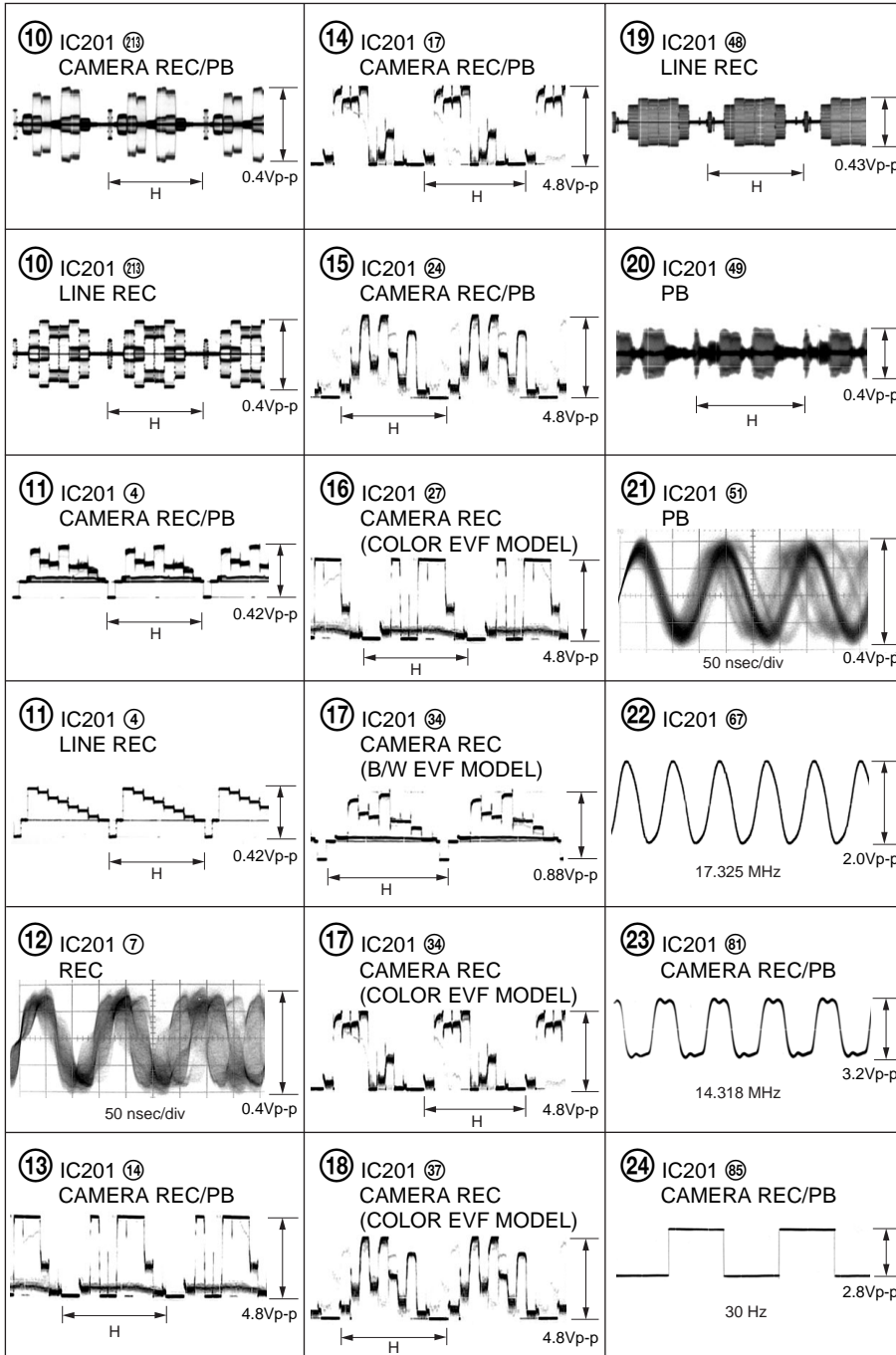


VC-234 BOARD (1/13)

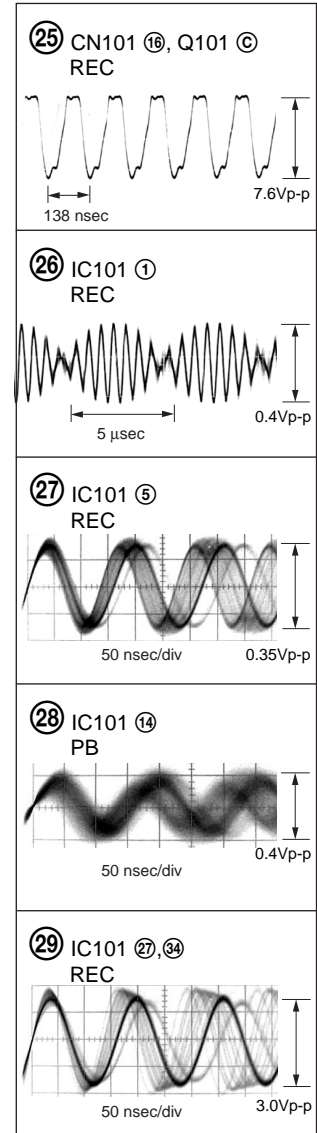


CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

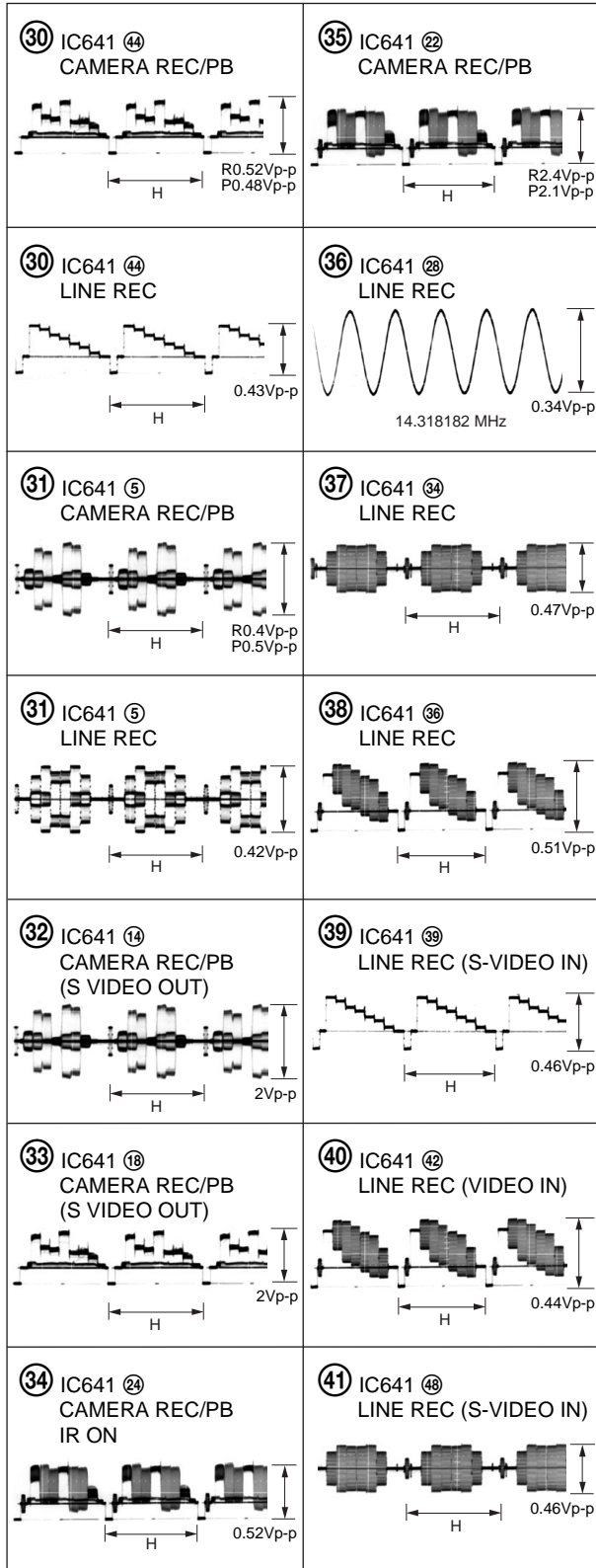
VC-234 BOARD (2/13)



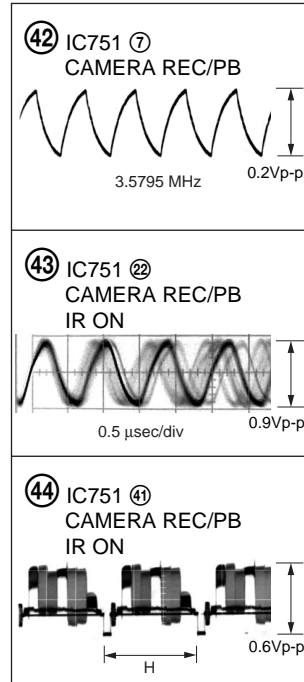
VC-234 BOARD (5/13)



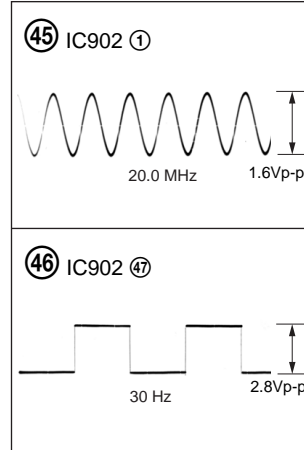
VC-234 BOARD (6/13)



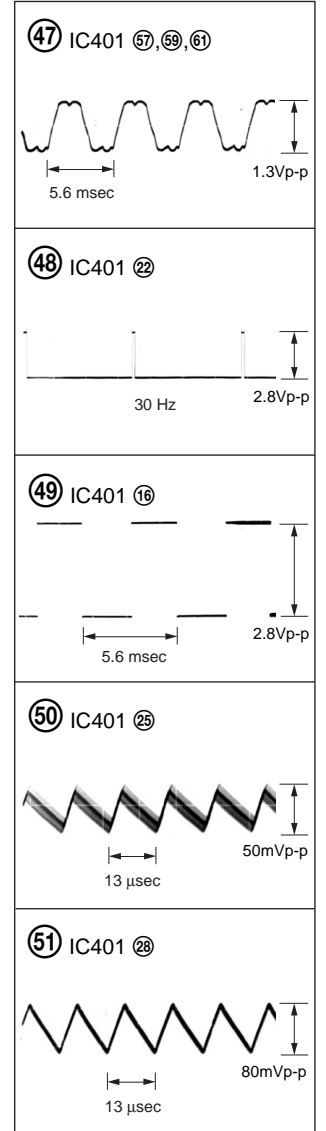
VC-234 BOARD (7/13)



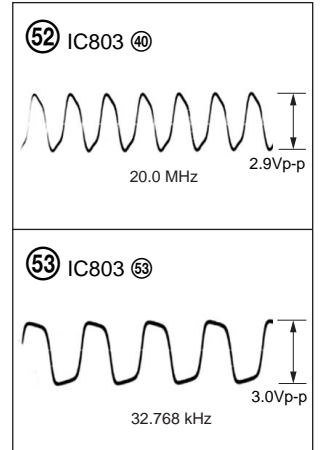
VC-234 BOARD (9/13)
CAMERA REC/PB



VC-234 BOARD (10/13)
CAMERA REC/PB

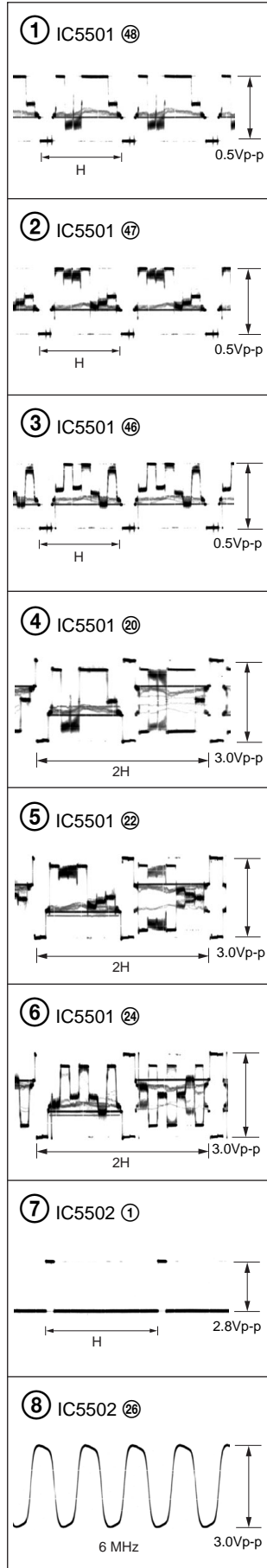


VC-234 BOARD (11/13)
CAMERA REC/PB

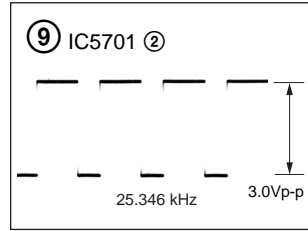


CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

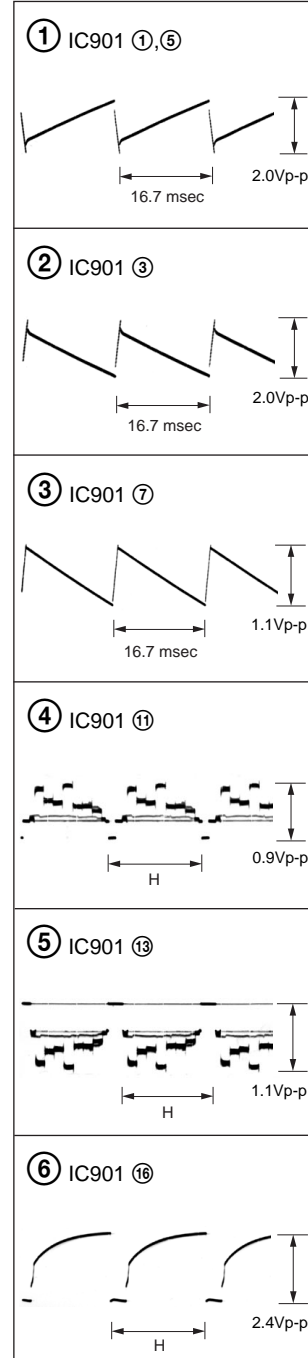
PD-117 BOARD (1/2)



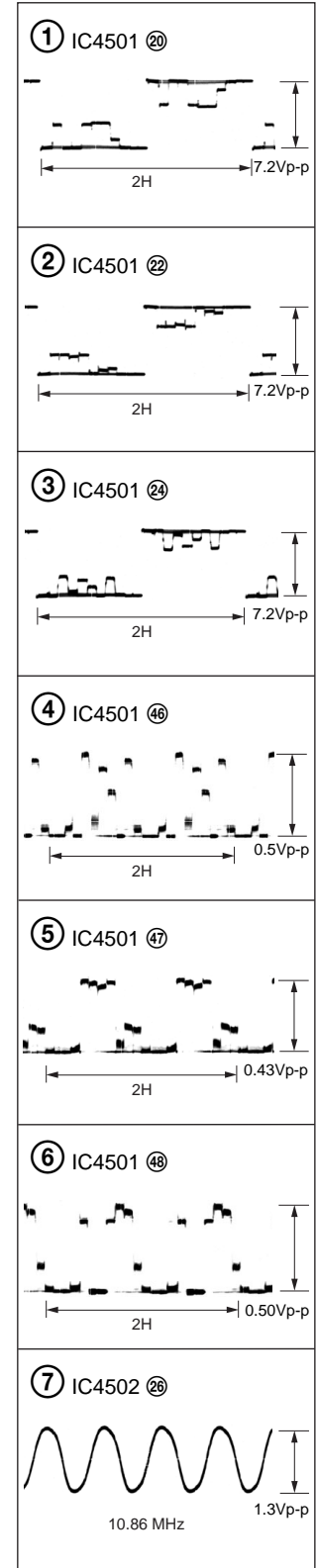
PD-117 BOARD (2/2)



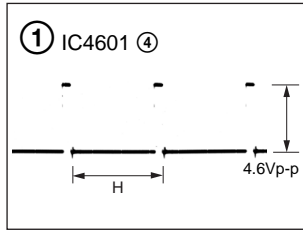
VF-129 BOARD
CAMERA REC/PB



VF-141 BOARD

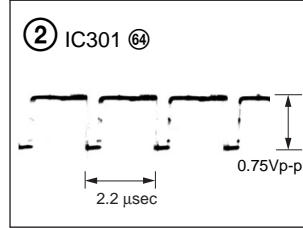
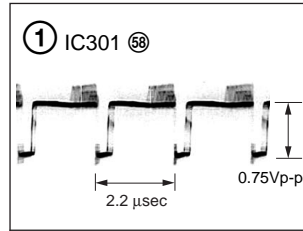


LB-62 BOARD



DD-134 BOARD

CAMERA REC/PB



**CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P**

4-4. MOUNTED LOCATION

CD-239/240 BOARD (SIDE A)

C201 A-1
C202 B-1
C203 B-1
C204 A-1
C205 A-1

CN201 B-2

L201 A-2

LND201 A-2

Q201 B-1

R201 B-2
R202 B-1
R203 B-1
R204 A-1

CD-239/240 BOARD (SIDE B)

IC201 A-3

VC-234 BOARD (SIDE A)

C104 A-5	C108 B-4	C109 B-5	C110 B-5	C111 B-5	C112 B-5	C113 A-4	C114 A-5	C115 B-4	C116 B-5	C117 B-5	C118 B-4	C120 B-5	C121 B-4	C123 B-4	C125 C-5	C131 B-4	C133 B-5	C134 B-5	C135 C-5	C136 C-4	C137 B-4	C138 C-4	C139 C-4	C141 B-5	C160 C-4	C206 E-9	C211 E-9	C212 D-8	C216 E-9	C217 D-8	C218 D-6	C219 E-7	C220 D-7	C221 D-7	C222 D-7	C223 E-7	C224 E-8	C225 E-8	C226 E-8	C227 E-8	C228 E-8	C231 D-8	C232 E-8	C236 E-8	C243 E-6	C245 F-6	C246 E-9	C247 F-9	C249 F-6	C250 G-9	C251 G-9	C256 F-6	C259 G-9	C261 G-6	C402 A-8	C410 A-8	C414 A-9	C506 F-5	C508 F-6	C511 F-5	C513 F-5	C514 F-5	C515 F-5	C516 E-5	C517 E-5	C518 E-5	C519 E-5	C520 E-5	C521 E-6	C522 E-6	C523 E-6	C524 E-6	C527 F-5	C528 F-6	C551 G-4	C552 G-4	C554 G-4	C559 F-4	C560 F-4	C562 F-4	C564 F-5	C565 E-4	C566 F-4	C567 F-5	C568 E-4
C104 A-5	C108 B-4	C109 B-5	C110 B-5	C111 B-5	C112 B-5	C113 A-4	C114 A-5	C115 B-4	C116 B-5	C117 B-5	C118 B-4	C120 B-5	C121 B-4	C123 B-4	C125 C-5	C131 B-4	C133 B-5	C134 B-5	C135 C-5	C136 C-4	C137 B-4	C138 C-4	C139 C-4	C141 B-5	C160 C-4	C206 E-9	C211 E-9	C212 D-8	C216 E-9	C217 D-8	C218 D-6	C219 E-7	C220 D-7	C221 D-7	C222 D-7	C223 E-7	C224 E-8	C225 E-8	C226 E-8	C227 E-8	C228 E-8	C231 D-8	C232 E-8	C236 E-8	C243 E-6	C245 F-6	C246 E-9	C247 F-9	C249 F-6	C250 G-9	C251 G-9	C256 F-6	C259 G-9	C261 G-6	C402 A-8	C410 A-8	C414 A-9	C506 F-5	C508 F-6	C511 F-5	C513 F-5	C514 F-5	C515 F-5	C516 E-5	C517 E-5	C518 E-5	C519 E-5	C520 E-5	C521 E-6	C522 E-6	C523 E-6	C524 E-6	C527 F-5	C528 F-6	C551 G-4	C552 G-4	C554 G-4	C559 F-4	C560 F-4	C562 F-4	C564 F-5	C565 E-4	C566 F-4	C567 F-5	C568 E-4
C570 F-5	C571 F-5	C572 F-4	C573 F-4	C642 C-1	C643 C-2	C650 C-2	C651 C-2	C664 C-1	C671 C-2	C672 C-2	C673 C-2	C701 A-2	C702 A-2	C703 B-2	C704 B-2	C705 A-1	C706 A-1	C707 B-2	C708 A-2	C709 B-1	C710 B-1	C711 B-1	C712 B-1	C713 A-2	C714 B-2	C715 A-1	C716 B-2	C717 A-2	C718 C-3	C719 A-2	C720 B-3	C721 B-2	C722 B-3	C723 A-3	C724 B-3	C725 B-3	C726 C-3	C727 C-3	C728 A-3	C729 B-3	C730 A-3	C731 B-3	C732 B-3	C733 A-3	C734 B-3	C735 A-3	C736 B-3	C737 B-3	C738 B-3	C739 A-3	C740 A-3	C741 A-3	C742 B-3	C743 B-3	C744 B-3	C745 A-3	C746 B-2	C747 B-2	C815 B-8	C817 B-8	C819 D-8	C820 C-7	C821 C-7	C822 D-7	C823 C-7	C824 B-7	C825 C-7	C826 C-7	C901 D-4	C902 D-4	C903 D-4	C904 D-4	C908 E-5	C909 D-5	C910 D-5	C911 C-6	C912 C-6	C913 C-6	C914 D-6	C971 D-9	C972 D-9	CN101 A-4	CN501 E-5	CN551 G-5	
CN972 A-1	CN974 A-2	CN975 B-7	CN976 A-6	CN977 F-9	CN978 A-7	CN979 A-8	CN981 B-9	CN983 D-9	D551 G-4	D973 G-9	FB101 A-4	FB102 A-5	FB201 G-6	FB502 F-5	FB503 F-5	FB504 F-6	FB505 F-6	FB641 C-3	IC101 B-4	IC201 F-7	IC202 G-6	IC502 F-6	IC552 F-4	IC701 B-3	IC803 C-8	IC902 D-5	L108 C-4	L203 D-8	L291 C-4	L553 E-5	L642 C-3	L644 C-3	LND101 B-6	LND102 C-6	LND103 C-4	Q101 B-5	Q102 B-5	Q103 B-5	Q104 B-5	Q202 E-6	Q204 E-7	Q205 E-7	Q206 E-7	Q207 E-7	Q208 E-8	Q209 E-8	Q212 E-6	Q401 A-9	Q551 G-4	Q554 E-4	Q641 C-3	Q642 C-2	Q643 C-2	Q644 C-1	Q701 B-1	Q703 B-1	Q704 B-1	Q706 B-1	Q707 A-1	Q709 A-1	Q710 B-2	Q711 B-2	Q712 C-3	Q713 C-3	Q974 D-9	Q975 D-9	R101 A-5	R102 A-5	R105 B-5	R110 B-5	R111 B-5	R112 B-5	R113 B-5	R114 B-4	R115 B-5	R116 B-5	R117 B-5	R120 B-4							
R121 B-5	R122 C-5	R127 B-4	R128 C-4	R201 E-9	R202 E-9	R206 E-6	R207 E-6	R208 E-8	R209 E-9	R210 E-7	R211 E-7	R212 E-7	R213 E-7	R214 E-8	R215 E-8	R216 E-7	R217 E-7	R218 E-7	R219 E-7	R220 E-8	R221 E-8	R225 E-8	R226 E-9	R228 E-9	R230 E-8	R231 E-8	R233 E-8	R234 E-6	R235 E-6	R236 D-7	R237 E-7	R238 D-7	R239 E-7	R240 E-7	R241 D-7	R242 D-7	R243 E-7	R244 E-7	R245 D-7	R246 D-8	R247 E-8	R248 D-8	R249 E-8	R250 E-8	R254 E-6	R255 E-6	R256 E-6	R257 E-6	R258 G-9	R259 F-9	R263 G-9	R273 G-9	R282 G-9	R401 A-7	R402 A-7	R403 A-3	R404 A-3	R405 A-7	R406 A-3	R407 A-8	R411 A-9	R414 A-8	R416 A-9	R432 A-8	R436 A-8	R504 F-5	R505 F-5	R506 F-6	R508 F-6	R509 F-5	R515 E-6	R516 E-6	R517 E-6	R551 G-4	R552 E-4	R553 G-4	R554 F-4	R555 G-5	R556 F-4	R557 G-5	R560 E-4	R561 F-4	R562 F-4	R563 F-4	R564 F-4
R565 F-4	R566 F-4	R567 G-4	R568 F-4	R569 F-4	R570 F-4	R571 F-4	R572 F-5	R573 F-4	R574 E-4	R575 E-4	R576 E-4	R577 E-4	R578 E-5	R641 C-2	R642 C-2	R643 C-1	R644 C-2	R645 C-2	R646 C-1	R647 C-2	R649 C-1	R703 A-2	R705 B-1	R706 B-1	R707 A-2	R707 A-2	R708 A-2	R710 B-2	R711 B-2	R712 A-2	R713 A-3	R714 B-3	R715 B-3	R716 A-3	R717 A-3	R718 B-3	R720 A-3	R721 B-2	R722 B-2	R723 B-2	R724 B-2	R725 B-1	R726 B-1	R727 B-2	R728 C-3	R729 B-2	R730 B-3	R731 C-3	R732 B-3	R813 C-8	R814 C-8	R815 C-8	R816 C-8	R817 C-8	R818 C-8	R819 D-8	R820 B-8	R821 C-8	R822 C-8	R825 C-8	R831 D-8	R832 D-8	R834 B-8	R837 D-8	R838 D-8	R839 D-8	R840 D-8	R843 B-8	R844 B-8	R845 B-8	R847 D-8	R848 B-8	R849 D-8	R866 D-7	R867 D-7	R868 B-8	R869 B-7	R870 B-7	R871 D-7	R872 D-7	R873 D-7	R874 B-7	R875 B-7	R876 C-7	R877 C-7
R878 C-7	R879 B-7	R880 B-7	R881 C-7	R882 C-7	R887 B-7	R888 C-7	R889 C-7	R890 C-7	R891 C-7	R892 C-8	R901 D-4	R902 D-4	R903 D-5	R905 D-5	R906 C-5	R907 C-5	R908 C-4	R909 C-5	R910 C-5	R911 C-5	R991 D-9	R912 D-5	R915 C-5	R916 E-5	R917 D-5	R918 C-6	R919 C-6	R920 C-6	R922 D-6	R923 D-6	R924 D-6	R925 D-6	R930 D-6	R931 D-6	R932 D-6	R933 D-6	R934 D-6	R973 F-9	R974 F-9	R984 D-9	R985 D-6	R986 D-6	R987 D-9	R988 D-6	R989 D-6	R990 D-9	X801 D-8	X802 D-7	X901 E-5																																				

**CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P**

VC-234 BOARD (SIDE B)

C101	A-14	C436	A-11
C102	A-15	C501	F-14
C103	B-14	C502	E-14
C105	A-15	C503	F-14
C106	B-15	C504	F-14
C107	B-14	C505	F-13
C119	A-15	C507	F-13
C126	B-15	C509	F-13
C128	B-15	C510	G-13
C130	B-14	C512	F-13
C142	B-14	C525	F-14
C143	A-15	C526	E-14
C145	A-16	C553	E-15
C146	B-14	C556	E-15
C147	A-16	C561	F-15
C148	B-15	C569	F-15
C149	B-16	C641	C-16
C150	B-16	C644	C-16
C151	B-15	C645	C-18
C152	B-15	C646	C-17
C153	B-16	C647	C-16
C154	A-16	C648	C-17
C155	A-16	C649	C-17
C156	C-15	C652	C-17
C157	B-15	C653	C-17
C158	C-15	C654	C-17
C159	C-15	C655	C-17
C201	D-11	C656	C-16
C202	D-11	C657	C-18
C203	E-10	C658	D-15
C207	E-12	C659	C-18
C210	E-11	C660	C-18
C213	E-11	C661	C-18
C233	E-12	C662	B-18
C234	E-12	C663	B-17
C237	E-11	C665	B-17
C238	E-11	C666	B-17
C239	E-13	C667	B-17
C240	E-13	C668	B-17
C241	E-10	C669	B-17
C242	E-10	C704	B-17
C244	F-10	C751	A-17
C252	G-10	C752	A-17
C253	G-12	C752	A-17
C254	E-12	C753	A-17
C255	E-12	C754	A-17
C257	G-12	C755	A-17
C258	F-12	C756	A-18
C260	G-11	C758	A-17
C262	F-13	C759	B-17
C263	G-11	C760	B-17
C265	G-11	C761	B-17
C266	G-11	C762	B-17
C291	C-15	C763	B-17
C292	C-15	C765	A-17
C293	D-15	C766	A-18
C401	B-11	C767	B-17
C403	B-12	C768	B-18
C404	B-12	C769	A-18
C405	B-12	C770	A-18
C406	B-11	C771	B-18
C407	B-11	C772	A-18
C408	B-10	C773	B-18
C409	A-12	C774	A-18
C411	A-12	C775	A-17
C412	A-12	C777	A-18
C413	B-12	C778	A-18
C415	B-11	C781	A-18
C416	B-11	C782	A-16
C417	B-12	C801	C-11
C418	B-11	C802	C-12
C419	A-12	C803	C-11
C420	B-11	C804	B-11
C421	B-12	C805	B-11
C422	A-11	C806	C-12
C423	A-11	C807	C-11
C424	A-12	C809	B-11
C425	A-11	C810	B-11
C427	A-11	C811	B-11
C428	A-12	C813	B-11
C429	A-12	C814	B-11
C430	A-12	C818	B-11
C431	A-11	C907	D-13
C433	A-11	C915	D-13
C434	A-11	C973	G-15
C435	A-11	C974	G-15

CN971	A-18
CN973	G-15
CN980	F-10
CN982	D-10
D201	E-11
D202	E-10
D203	F-13
D401	B-10
D501	F-13
D502	E-14
D801	B-12
D802	B-12
D803	D-12
D804	C-11
D805	B-11
D971	G-15
D972	G-15
FB103	B-16
FB104	B-16
FB202	E-13
FB203	F-12
FB204	F-12
FB205	E-12
FB207	E-12
FB291	D-15
FB501	E-13
FB505	E-14
FB801	C-12
FB901	D-13
IC102	B-16
IC203	F-12
IC204	G-10
IC205	E-10
IC291	D-15
IC401	A-11
IC501	F-14
IC551	F-15
IC641	C-17
IC751	A-17
IC801	C-12
IC802	B-11
IC901	D-14
L101	A-14
L102	B-14
L103	A-15
L104	B-14
L105	A-16
L107	C-15
L204	E-13
L205	E-13
L206	D-11
L208	E-13
L209	F-10
L501	E-13
L551	E-15
L552	E-15
L641	C-16
L643	C-18
L751	B-18
L752	B-17
L753	B-18
L754	A-18
Q105	B-14
Q106	B-14
Q107	A-15
Q108	A-15
Q109	B-15
Q110	B-15
Q111	C-15
Q112	A-14
Q113	A-14
Q203	E-11
Q211	E-11
Q213	E-12
Q214	G-10
Q552	F-15
Q553	F-15
Q801	C-11
Q802	C-11
Q803	C-11

Q804	D-12
Q805	C-11
Q806	C-11
Q972	F-10
Q973	F-10
R103	B-14
R104	B-15
R106	B-14
R107	B-15
R108	B-15
R109	B-14
R129	A-15
R130	A-16
R131	A-15
R132	A-16
R133	B-14
R134	A-16
R135	B-14
R136	A-15
R137	A-16
R138	B-15
R139	B-16
R140	B-16
R141	B-15
R142	B-15
R143	B-16
R144	B-16
R145	B-16
R146	C-15
R147	C-15
R148	B-15
R149	B-15
R150	B-15
R151	B-15
R152	B-15
R153	B-15
R155	C-15
R156	C-15
R204	E-11
R205	E-11
R222	G-12
R223	G-12
R224	E-11
R229	E-11
R232	E-11
R251	E-11
R252	E-11
R253	E-10
R260	G-10
R261	G-12
R262	G-12
R264	F-13
R265	E-12
R266	E-11
R270	F-13
R271	E-12
R274	G-10
R275	F-11
R276	F-10
R277	F-10
R278	D-13
R279	F-10
R280	E-12
R283	G-13
R408	B-12
R409	B-12
R410	B-12
R412	B-11
R413	B-11
R417	A-11
R419	A-11
R423	A-11
R424	A-11
R425	A-12
R426	A-12
R427	A-11
R428	A-12
R429	A-12
R430	A-11
R431	A-11
R433	A-11
R434	A-12
R435	A-12
R501	E-14
R502	E-14

R503	F-14
R512	F-13
R518	F-14
R519	E-14
R558	F-15
R559	F-15
R648	C-18
R650	C-16
R651	C-17
R652	C-16
R653	C-18
R655	B-17
R656	B-17
R657	B-17
R658	B-17
R719	B-16
R755	B-17
R756	B-16
R757	A-16
R758	A-17
R759	A-17
R760	B-17
R761	A-17
R762	A-18
R763	A-17
R764	B-17
R765	B-17
R766	A-17
R767	B-18
R768	A-18
R770	A-18
R771	A-18
R772	A-18
R773	A-18
R774	A-18
R775	B-18
R776	A-17
R777	A-17
R801	C-11
R802	C-11
R803	D-12
R805	C-11
R806	C-11
R807	C-11
R808	C-12
R809	C-11
R810	C-11
R811	D-12
R812	C-11
R823	C-11
R824	B-12
R833	B-11
R835	B-12
R836	B-11
R865	C-11
R886	B-12
R904	D-14
R913	E-14
R914	E-14
R921	D-13
R935	E-14
R971	G-14
R972	G-15
R975	G-10
R976	F-10
R977	C-12
R978	B-12
R979	C-13
R980	B-12
R981	B-12
R982	D-10
R983	D-10
R992	B-13
R993	B-12
R995	B-12
R997	B-11
R998	C-13
X501	F-13
X641	B-18

CF-66 BOARD (SIDE A)

C001	B-6
C002	B-6
C003	C-5
C004	C-4
C008	D-6
CN010	D-5
D001	A-1
D003	D-8
D004	B-4
D005	B-6
D006	A-6
D007	B-7
D008	D-6
D009	C-6
IC001	C-5
L001	D-4
L004	C-6
L005	B-6
Q001	D-4
Q002	D-6
Q003	C-6
R001	D-4
R002	D-6
R003	C-6
R004	D-6
R009	D-6
R010	D-6
R011	C-5
R012	B-4

R013	B-3
R014	B-2
R015	C-3
R016	B-4
R017	B-4
R018	B-2
R019	C-3
R020	B-4
R021	C-2
R025	C-2
R032	B-1
R033	B-1
R038	D-4
R039	D-4
R040	C-4
R041	C-4
R042	C-6
R043	C-6
R044	D-6
R045	D-6
R046	D-6
R047	D-6
S001	B-4
S002	D-8
S003	B-5
S005	D-8
S008	B-9
S009	B-1
S010	B-3
S011	D-9
S012	C-1
S014	B-5
S015	B-6
S016	B-7

CF-66 BOARD (SIDE B)

BH001	B-13
BZ001	B-17
BZ002	C-17
C005	D-13
C006	D-12
C007	D-11
C009	C-15
CN001	C-13
CN002	A-18
CN006	D-13
CN007	D-15
CN008	C-16
D002	C-12
L002	D-13
L003	D-11
Q004	D-12
Q005	D-12
Q006	D-12

R005	B-15
R006	B-16
R007	B-16
R008	B-16
R022	C-16
R023	C-16
R026	C-16
R027	D-12
R028	D-12
R029	D-12
R030	D-12
R034	C-16
R035	D-12
R036	D-12
R037	D-11
R048	D-16
S006	C-11
S007	D-11

**CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P**

CF-67 BOARD (SIDE A)

BH001	D-5	R020	A-3
		R022	B-6
D001	A-1	R027	B-5
D004	A-4	R036	B-5
D007	A-5	R043	C-1
		S001	A-3
LND001	A-6		
		S002	B-3
R002	A-4	S004	A-5
R004	B-4	S005	B-4
R006	A-4	S006	B-6
R008	B-4	S008	B-6
R013	B-5	S009	A-7
R014	A-5	S011	A-6
R017	A-5	S012	B-3
R019	B-6	S014	B-5

CF-67 BOARD (SIDE B)

C001	D-12	Q004	C-13
C002	D-10	Q005	C-12
C003	D-10	Q006	D-12
C004	D-12		
C005	C-13	R001	C-13
C006	C-12	R003	C-9
C007	D-12	R005	C-9
C008	C-13	R007	B-9
C009	C-12	R009	C-10
		R010	C-10
CN001	B-11	R011	C-10
CN002	A-14	R012	C-9
CN003	D-11	R015	C-10
CN004	C-14	R016	C-10
CN005	B-14	R018	C-9
CN006	D-12	R021	D-9
CN007	C-12	R023	C-13
CN008	D-13	R024	D-12
CN009	B-13	R026	D-9
		R028	C-13
D002	D-11	R029	C-13
D003	B-9	R030	D-12
D005	D-10	R031	D-12
D006	D-10	R032	C-13
D008	D-11	R034	D-9
D009	D-10	R035	D-9
		R037	C-13
JL001	C-11	R038	C-13
JL002	D-11	R039	C-12
		R040	C-12
L001	D-12	R041	C-12
L002	C-13	R042	C-13
L003	D-12	R044	C-13
		R048	C-12
LND002	A-13		
		S003	C-8
Q001	B-13	S007	C-8
Q002	C-10	S010	D-8
Q003	C-10	S013	E-8

EJ-29/30 BOARD (SIDE A)

J251 B-4

EJ-29/30 BOARD (SIDE B)

CN251 A-8
CN252 B-8
CN253 A-7

D251 B-6
D252 A-6
D253 B-6
D254 A-7
D255 B-7
D256 B-6
D257 B-6

FB251 B-6
FB252 A-6
FB253 B-6

LND251 A-6

R251 B-8
R252 B-8
R253 B-7
R254 B-7
R255 A-7
R256 A-7
R256 B-8
R257 A-8
R259 B-7

S251 B-7

PJ-99/100 BOARD (SIDE A)

J101 C-1

PJ-99/100 BOARD (SIDE B)

C101 C-4
C102 D-4
C103 B-4
C104 A-3
C105 B-3
C106 B-4
C107 E-3
C108 E-4

CN101 C-3

D101 D-4
D102 E-4
D103 E-4
D104 E-3
D105 B-4

L101 C-3
L102 C-4
L104 B-3
L105 B-3

LND101 B-4

Q101 E-3
Q102 D-3

R102 D-3
R103 D-4
R104 D-3
R105 D-3
R108 E-4
R109 C-3

VDR101 C-4
VDR102 A-3

SE-101 BOARD (SIDE A)

C453 C-3
C454 D-3
C460 C-3
C465 A-2
C466 A-2

CN451 A-3

J451 A-2

L451 B-3
L452 A-3
L453 A-2

R461 A-3

SE451 C-3
SE452 E-4

VDR451 A-3
VDR452 A-2

SE-101 BOARD (SIDE B)

C451 B-6
C452 D-7
C455 C-7
C456 C-7
C457 C-7
C459 C-7
C461 D-6
C462 B-7
C463 C-6
C464 B-7

IC451 C-7

LND451 A-7

R451 B-6
R452 D-7
R453 D-7
R454 B-6
R455 C-6
R456 C-7
R457 C-7
R458 C-6
R459 C-6
R460 B-7

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VL-29 BOARD (SIDE A)

C151 A-2
C153 A-2

D151 A-2
D152 A-2

L151 A-2

Q151 A-2

R153 A-2
R154 A-2

VL-29 BOARD (SIDE B)

C152 A-3

CN151 A-3

D153 A-4

LND151 B-4
LND152 B-4
LND153 A-4
LND154 B-3
LND155 B-3

Q152 A-3

R151 A-3
R152 A-3

MA-374/375 BOARD (SIDE A)

C306 B-4
C323 C-2
C324 C-2
C326 C-2
C329 C-2
C333 C-2
C336 B-2
C339 C-2
C340 C-2
C341 C-3
C342 B-2
C343 D-2
C344 D-2
C345 D-2
C346 D-2
C347 D-2
C348 D-2
C353 B-3
C354 B-3
C356 B-3
C357 E-2
C359 B-4
C360 B-3
C365 D-2

D302 A-3
D303 A-3
D304 B-2
D305 B-4
D306 B-3
D307 E-2
D321 C-2
D322 C-2

IC301 A-4
IC322 B-3

J321 B-1

LND301 A-3

Q322 B-2

R321 C-2
R322 B-2
R324 B-2
R325 C-2
R326 C-2
R329 C-2
R330 C-2
R334 C-2
R340 B-2
R342 C-2
R343 C-2
R344 C-2
R345 C-3
R346 B-3
R347 B-2
R348 C-2
R349 C-2
R350 D-2
R351 D-2
R352 D-2
R353 D-2
R354 D-2
R355 D-2
R358 B-3
R359 D-2
R361 D-2
R362 D-2
R363 C-2

S301 D-1

MA-374/375 BOARD (SIDE B)

C301 A-7
C302 B-6
C303 A-7
C304 A-6
C305 B-7
C321 A-8
C322 C-7
C325 C-7
C327 C-8
C328 C-8
C330 C-7
C331 C-8
C332 C-9
C334 C-7
C335 C-9
C337 C-7
C338 C-9
C349 C-7
C351 D-8
C352 D-8
C355 D-8
C358 B-6
C361 D-8
C362 C-8
C363 C-8
C364 C-8

CN301 B-7
CN302 B-8

D323 A-8

F301 A-7

IC321 C-8

L301 B-7

Q301 A-6
Q302 A-6
Q303 B-6
Q304 B-7
Q321 C-7

R301 A-6
R302 A-6
R303 B-6
R304 A-6
R305 A-6
R306 A-7
R307 B-6
R308 B-7
R309 B-7
R310 B-6
R311 B-6
R312 A-8
R313 B-6
R314 D-8
R315 E-8
R323 B-8
R327 C-7
R328 C-7
R331 C-8
R332 C-7
R333 C-7
R335 C-7
R336 C-9
R337 C-7
R338 C-7
R339 C-9
R356 D-8
R357 D-8
R360 D-8
R364 D-8
R365 D-8

PD-117 BOARD (SIDE A)

C5502 B-4
C5504 C-4
C5505 A-5
C5506 A-5
C5507 A-5
C5515 C-4
C5516 C-4
C5520 B-5
C5521 B-3
C5522 B-3
C5523 D-4
C5524 B-4
C5528 B-4
C5530 C-5
C5531 C-5
C5706 C-3
C5707 C-3
C5708 C-3
C5709 D-3
C5710 D-3

CN5501 D-5
CN5502 B-5
CN5604 D-1
CN5701 A-2
CN5702 A-5
CN5703 A-1
CN5704 A-3
CN5705 A-3
CN5706 D-3

D5502 C-4

FB5502 A-4

IC5502 C-4
IC5503 C-4
IC5702 C-3

L5505 C-4
L5601 D-2
L5702 C-3

LND701 D-2
LND702 B-1

Q5502 B-4
Q5503 C-5
Q5504 C-5
Q5505 C-5
Q5506 C-5
Q5607 D-1

PD-117 BOARD (SIDE B)

C5501 A-8
C5503 A-7
C5508 C-8
C5509 B-8
C5510 B-7
C5511 B-8
C5512 B-8
C5513 B-7
C5514 B-8
C5517 B-7
C5518 B-7
C5519 B-8
C5525 A-8
C5526 A-8
C5527 B-7
C5529 C-8
C5601 C-9
C5604 B-10
C5605 D-10
C5606 D-10
C5608 B-10
C5612 B-10
C5704 B-9

D5501 C-8
D5503 C-8
D5601 D-10
D5602 D-11
D5603 A-11
D5604 A-10
D5701 C-9

FB5503 B-8

IC5501 B-8
IC5601 C-9
IC5602 D-10
IC5701 B-9

L5501 A-8
L5504 B-8
L5701 B-10

LND703 B-11
LND704 D-10
LND705 A-11

Q5501 C-8
Q5601 C-9
Q5602 C-10
Q5603 D-10
Q5604 D-10
Q5701 C-9

R5501 A-7
R5502 A-8
R5503 A-8
R5504 C-8
R5505 B-7
R5506 B-8
R5507 B-8
R5508 B-8
R5509 B-8
R5510 B-8
R5511 B-8
R5514 C-7
R5515 C-7
R5518 C-7
R5519 D-8
R5520 D-8
R5522 C-7
R5523 C-7
R5524 C-7
R5525 C-7
R5551 C-8
R5557 A-8
R5558 B-8
R5560 C-8
R5603 C-9
R5609 C-9
R5610 C-10
R5611 C-10
R5612 D-10
R5613 C-10
R5614 C-9
R5616 D-10
R5617 D-10
R5618 D-10
R5619 A-11
R5620 A-10
R5704 D-7
R5706 C-7
R5707 A-7
R5708 A-7
R5710 A-10
R5711 A-9
R5712 B-9
R5713 A-8
R5714 A-9
R5717 D-9

S5701 D-7
S5702 C-7
S5703 B-7
S5704 A-7

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TRV57/TRV57P/TRV67/TRV87/TRV87P**

VF-129 BOARD (SIDE A)

C903	A-2
C904	B-2
C906	A-2
C907	A-1
C909	B-1
C913	A-2
CN902	B-1
D901	A-1
IC901	A-1
L901	B-1
L903	D-1
R903	A-1
R907	B-1
R908	B-2
R909	B-2
R910	B-2
R912	A-2

R913	C-2
R914	C-2
R915	B-1
R916	A-1
R917	A-1
R922	E-1
R927	B-1
R928	B-1
R929	A-1
R930	C-1
R931	C-1
R932	C-1
RV903	C-2
RV904	D-1
T901	D-1
T902	D-1
TH901	B-2
W901	D-2

VF-141 BOARD (SIDE A)

C4501	B-1
C4504	B-1
C4510	B-2
C4515	B-2
C4516	B-2
C4517	A-2
C4521	A-2
C4524	A-2
C4527	B-1
CN4502	A-2
D4501	B-2
D4502	B-2
D4503	A-2
D4504	A-2
FB4505	B-1
IC4502	A-2
L4501	B-1
L4504	B-2

Q4502	A-1
Q4503	A-1
Q4504	B-2
R4505	A-1
R4506	A-1
R4507	A-1
R4508	B-1
R4522	B-2
R4524	A-2
R4525	A-2
R4529	A-2
R4530	A-1
R4534	A-1
R4535	A-1
R4542	A-1
R4543	A-2
R4544	B-1

LB-62 BOARD (SIDE A)

D4601	B-2
D4602	A-1
ND4601	A-1
R4603	A-2

LB-62 BOARD (SIDE B)

C4601	A-3
C4602	A-3
C4603	A-3
C4604	A-4
CN4601	A-4
IC4601	A-4
L4601	B-3
L4602	B-3
Q4601	A-3
R4601	A-4
R4602	B-3
R4604	A-3
T4601	B-4

VF-129 BOARD (SIDE B)

C901	A-3
C902	A-3
C905	A-3
C908	C-2
C910	C-3
C911	C-3
C912	B-3
C914	D-3
C915	E-3
C916	C-3
CN901	B-3
D903	D-3
L902	B-3
Q901	A-2
Q902	B-2
Q903	C-3
Q904	C-2

R901	A-3
R902	A-3
R904	A-3
R905	A-2
R906	A-2
R911	A-3
R918	C-2
R919	C-2
R920	C-2
R921	D-2
R923	E-3
R924	C-3
R925	C-3
R926	D-2

VF-141 BOARD (SIDE B)

C4503	A-5
C4505	A-5
C4506	A-5
C4507	B-5
C4508	B-5
C4509	B-5
C4511	B-4
C4512	B-4
C4513	A-4
C4514	A-4
C4518	A-4
C4519	A-4
C4520	A-4
C4523	B-4
C4526	A-5
CN4501	B-5

FB4502	A-4
IC4501	A-4
R4513	A-4
R4515	B-4
R4516	B-4
R4517	B-4
R4518	B-4
R4520	B-4
R4521	B-4
R4526	A-4
R4527	A-4
R4528	A-4

**CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/
TRV67P/TRV87/TRV87P/TR317/TR517**

DD-134 BOARD (SIDE A)

C306	C-1
C307	B-1
C310	C-3
C321	D-3
C327	D-2
C335	B-2
C339	D-3
C344	A-2
C345	A-2
C349	A-2
C350	A-2
C352	C-3
C355	A-1
C358	A-3
C360	A-3
C361	A-1
C363	A-1
C364	A-3
CN301	C-1
D301	B-1
D302	B-1
D304	C-1
D305	C-3
D306	C-2
D308	B-2
D309	A-2
D310	A-2
D311	A-2
D312	B-2
D313	B-2
F302	D-2
F303	D-3
F304	D-3
F305	D-3
F306	D-2
FB321	A-1
L301	B-3
L302	C-2
L304	B-3
L305	C-3
L306	C-3
L318	C-3
L319	A-1
LND302	A-2
LND308	B-2

DD-134 BOARD (SIDE B)

C301	D-6
C302	D-6
C303	D-5
C304	D-5
C305	D-5
C308	D-5
C309	D-6
C311	D-6
C312	C-5
C313	C-6
C314	C-5
C315	C-6
C316	C-5
C317	C-6
C318	C-5
C323	C-6
C324	C-5
C325	C-5
C326	C-5
C328	B-6
C329	B-5
C330	B-5
C331	D-6
C332	B-5
C333	B-6
C336	B-5
C337	C-5
C338	B-5
C340	C-6
C341	C-6
C342	A-6
C343	C-6
C346	A-5
C347	B-6
C348	A-6
C351	B-6
C353	A-6
C354	A-5
C356	A-5
C362	A-6
C367	D-5
C366	A-6
CN933	A-7
D307	D-6
D314	D-6
FB310	C-6
FB320	A-7
IC301	C-5
L303	C-6
L307	B-6
L308	B-6
L309	B-6
L313	A-5
L314	A-5
L315	A-6
L316	A-5
L317	A-6
Q306	D-6
Q307	B-6
Q308	B-5
Q309	C-5
Q310	B-6
Q311	B-5
Q312	C-5
Q313	C-6
Q315	C-6
Q317	A-6
Q318	A-5
Q319	A-5
Q321	A-6
R301	D-6
R302	D-5
R304	C-6
R305	D-5
R306	D-6
R307	C-4
R311	D-6
R312	C-5
R314	C-6
R315	C-5
R318	C-6
R320	D-6
R321	D-6
R322	C-6
R323	A-5
R324	A-6
R325	A-6
R326	A-6
R327	A-5
R328	A-5
R330	D-6
R331	C-5
R335	D-6
R353	D-5
R354	D-5
R355	D-6
R356	B-6
R357	A-6
R358	A-6

SECTION 5 ADJUSTMENTS

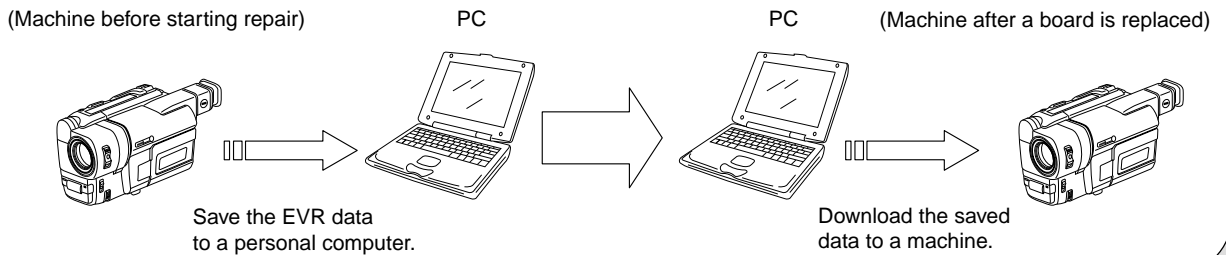
1. Before starting adjustment

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

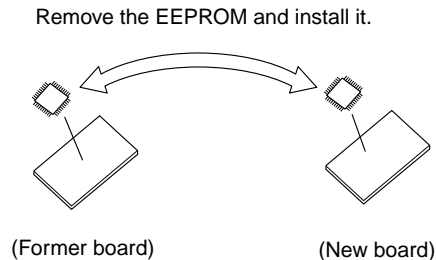
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



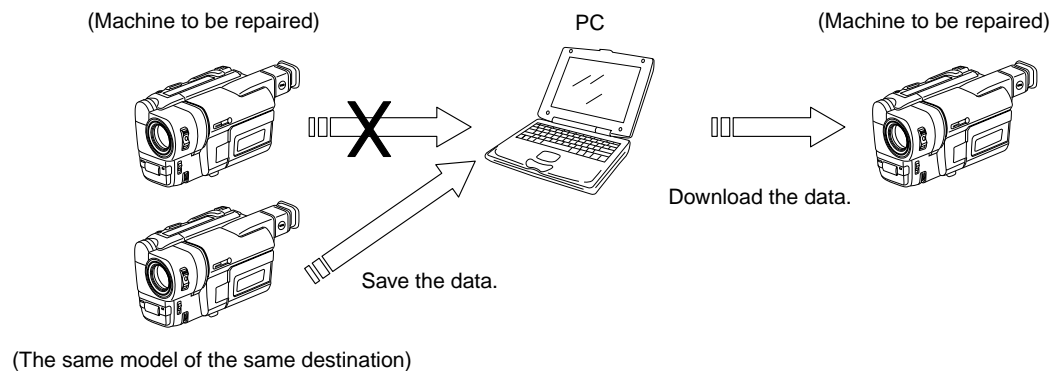
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 5-3 for the items to be checked.)

• **Adjusting items when replacing a board or EEPROM**

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced parts						
		Board replacement						
		SE-101 board (*5)	VC-234 board	PD-117 board (*3)	VF-129 board (*2)	VF-141 board (*1)	LB-62 board (*1)	VC-234 board
Initialization of D, E, F, 7 page data	Initialization of D, E, F, 7 page data							●
Camera	Hall adj.	●						●
	Flange back adj.	●						●
	Color reproduction adj.	●						●
	AWB & LV standard data input	●						●
	Auto white balance adj.	●						●
	Steady shot check (*5)	●	●					●
Color EVF (*1)	EVF Initial data input		●					●
	VCO adj.		●			●		●
	RGB AMP adj.		●			●		●
	Contrast adj.		●			●		●
	Backlight consumption current adj.		●			●		●
	White balance adj.		●			●	●	●
B/W EVF (*2)	Centering adj.				●			
	Focus adj.				●			
	Aberration adj.				●			
	Horizontal amplitude adj.				●			
	Vertical amplitude adj.				●			
	Brightness adj.				●			
LCD (*3)	LCD Initial data input		●					●
	VCO adj.		●	●				●
	RGB AMP adj.		●	●				●
	Contrast adj.		●	●				●
	COM AMP adj.		●	●				●
	V-COM adj.		●	●				●
	White balance adj.		●	●				●
Servo	CAP FG offset adj.		●					●
	Switching position adj.		●					●
Video	28MHz origin oscillation adj.							●
	AFC f ₀ adj.							●
	Filter f ₀ adj.							●
	Y OUT level adj.							●
	C OUT level adj.							●
	REC Y current adj.							●
	REC C/AFM current adj.							●
IR (*6)	IR video carrier frequency adj.							●
	IR video deviation adj.							●
	IR audio deviation adj.							●
Audio	1.5MHz deviation adj.							●
	1.7MHz deviation adj. (*4)							●
	BPF f ₀ adj.							●
Mechanism	Tape path adj.							

*1: Color EVF model (CCD-TR517) only.

*2: B/W EVF model (CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P/TR317) only.

*3: TRV model (CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P) only.

*4: STEREO model (CCD-TRV87/TRV87P) only.

*5: STEADY SHOT model (CCD-TRV57/TRV57P/TRV67/TRV87/TRV87P) only.

*6: LASER LINK model (CCD-TRV87/TRV87P) only.

Table. 5-1-1(2).

5-1. CAMERA SECTION ADJUSTMENT

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Color monitor
- Vectorscope
- Regulated power supply
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.4	J-6080-806-A	White balance check
	ND filter 0.1	J-6080-807-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjustment remote commander (RM-95 upgraded) (Note1)	J-6082-053-B	
J-6	Siemens star chart	J-6080-875-A	For checking the flange back
J-7	Clear chart for pattern box	J-6080-621-A	
J-8	Multi CPC jig	J-6082-311-A	For adjusting the LCD block
J-9	CPC-7 jig	J-6082-382-A	For adjusting the video section For adjusting the color viewfinder
J-10	Power code (Note2)	J-6082-223-A	For connecting the battery terminal and DC power supply
J-11	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-12	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter

Note1: If the micro processor IC in the adjustment remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note2: Connect the adjustment remote commander to the LANC jack, and set to HOLD switch to the "ADJ" side.

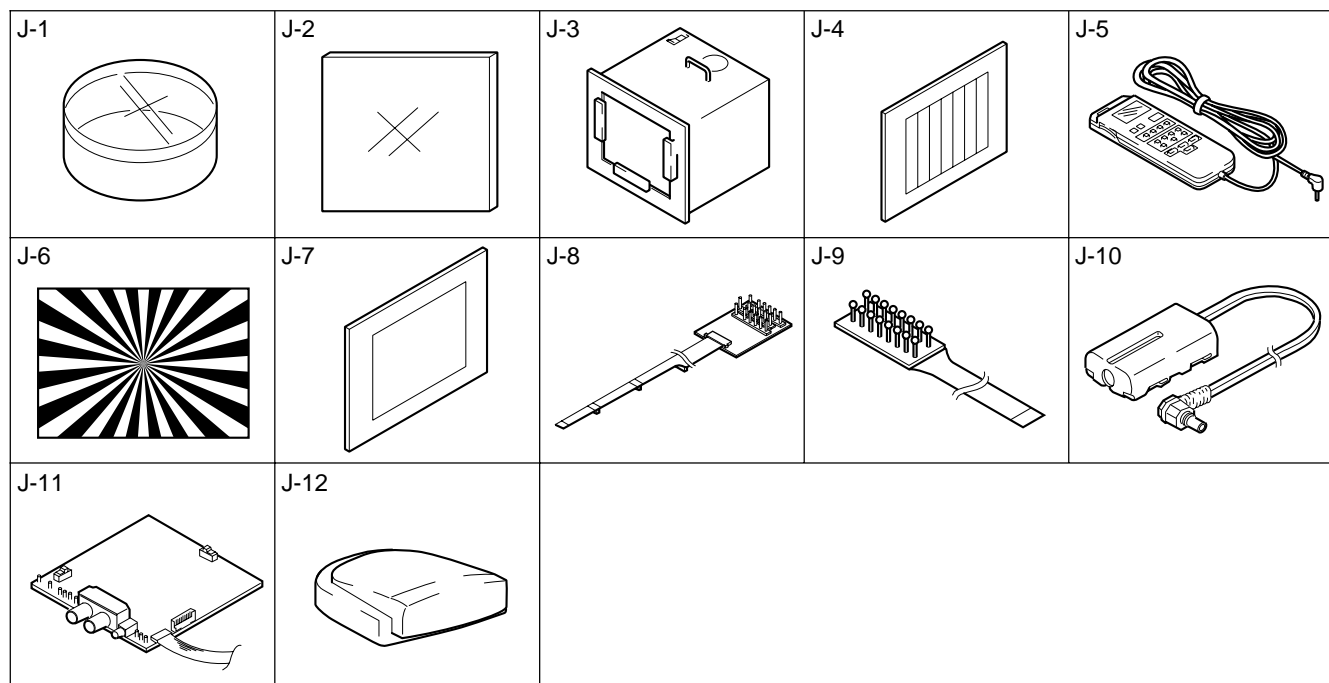


Fig. 5-1-1.

1-1-2. Preparations

Note1: For details of how remove the cabinet and boards, refer to “2. DISASSEMBLY”.

Note2: When performing only the adjustments, the lens block and boards need not be disassembled.

Note3: TR model / TRV model

TR model: CCD-TR317/TR517

TRV model: CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P

- 1) Connect the equipment for adjustments according to Fig. 5-1-3, 5-1-4.
- 2) By setting the “Forced Camera Power ON mode”, the camera power can be turned ON even if the front panel block (MA-374/375 board, power switch, microphone unit) has been removed. When removing the front panel block, disconnect the following connector.
 1. VC-234 board CN972 (20P 0.5mm)

Note4: As removing the cabinet (R) (removing the VC-234 board CN975) means removing the lithium 3V power supply (CF-66/67 board BH001), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on history use (data of page: 2, address: A2 to AA). (Refer to “SELF-DIAGNOSIS FUNCTION” for the self-diagnosis data, and refer to “5-4. Service Mode” for the data on the history use.)

Note5: Setting the “Forced Camera Power ON” Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.

The above procedure will enable the camera power to be turned on with the front panel block removed. After completing adjustments, be sure to exit the “Forced Camera Power ON Mode”.

Note6: Exiting the “Forced Camera Power ON” Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 0, address: 01, and set data: 00.

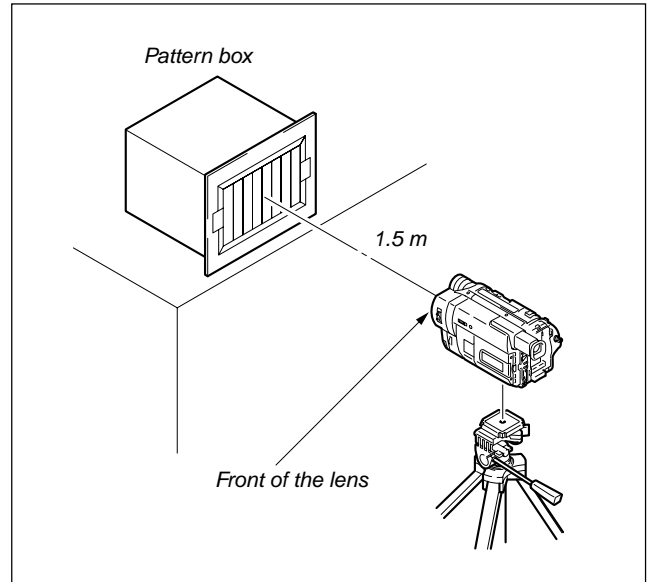


Fig. 5-1-2.

TRV model (CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)

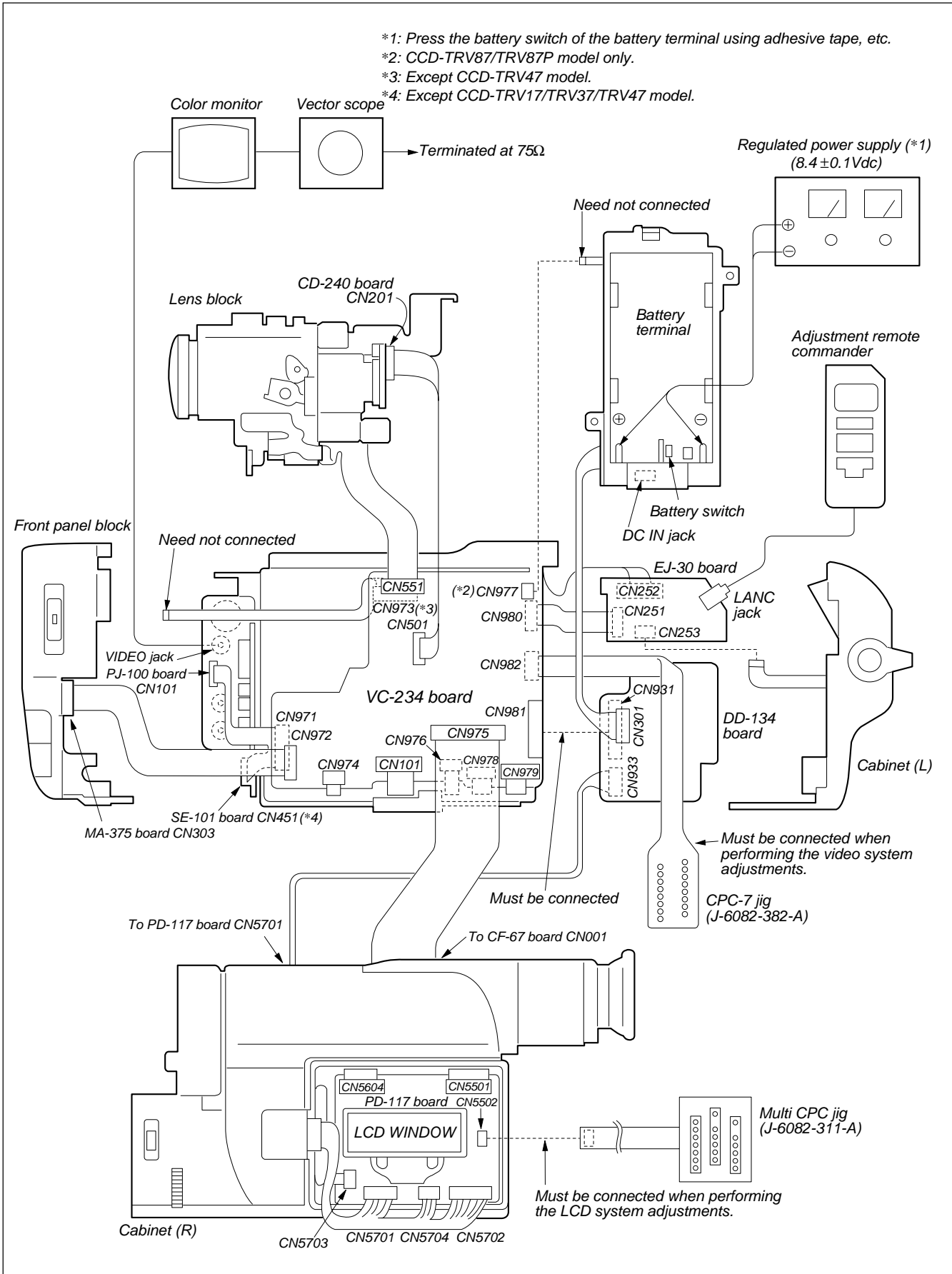


Fig. 5-1-3.

TR model (CCD-TR317/TR517)

*1: Press the battery switch of the battery terminal using adhesive tape, etc.
 *2: CCD-TR517 model only.

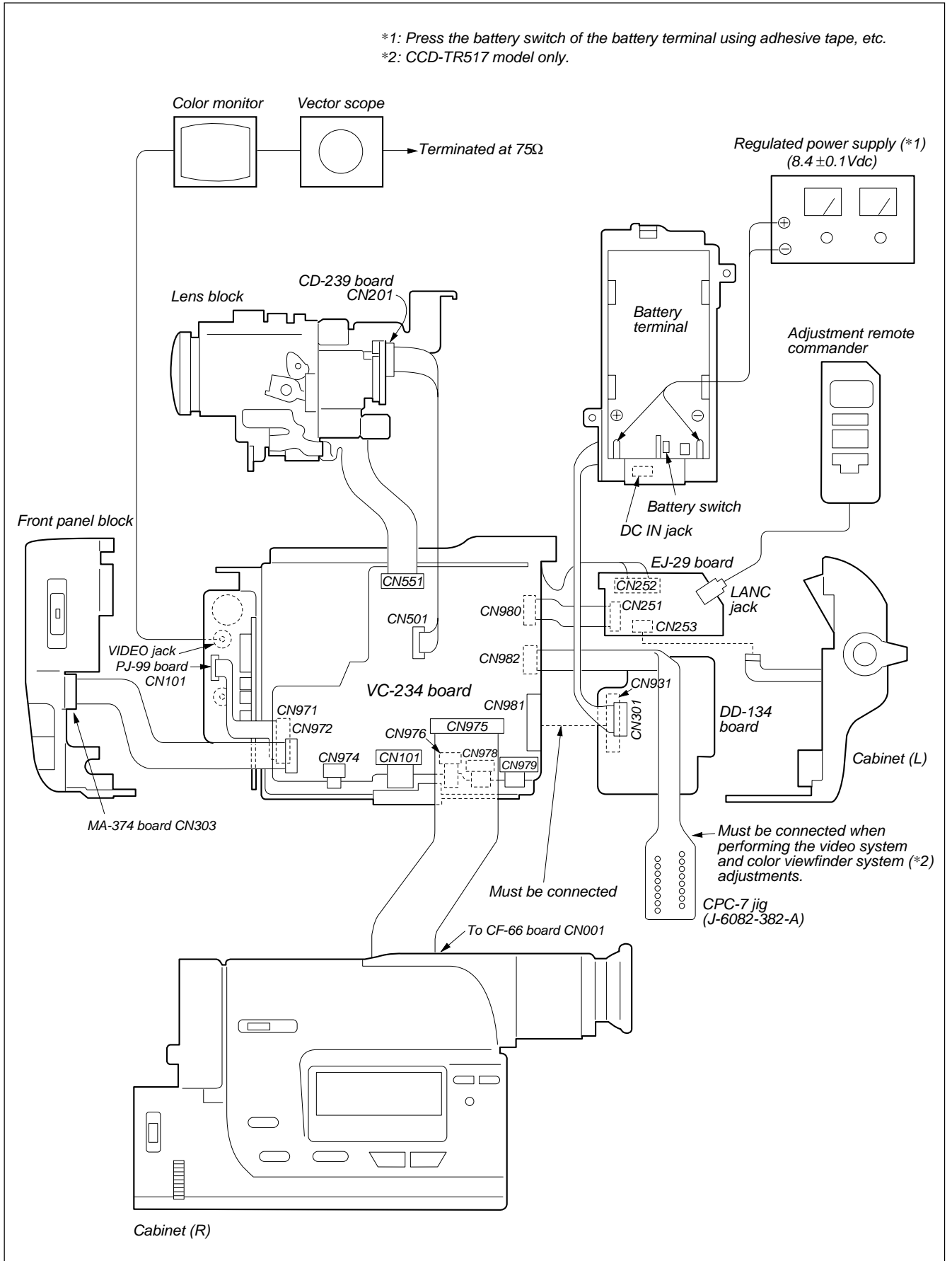


Fig. 5-1-4.

1-1-3. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

- | | |
|--|---|
| 1. POWER switch (MA-374/375 board) CAMERA | 8. DISPLAY (CF-66/67 board) (Note3) ON |
| 2. NIGHT SHOT switch (Lens block) OFF | 9. FOCUS switch (MR-8500 block) MANUAL |
| 3. VIDEO LIGHT switch (MA-374/375 board) (Note1) OFF | 10. PROGRAM AE (CF-66/67 board) Auto |
| 4. DEMO MODE (Menu display) OFF | 11. BACK LIGHT (CF-66/67 board) OFF |
| 5. DIGITAL ZOOM (Menu display) OFF | 12. PICTURE EFFECT (CF-66/67 board) OFF |
| 6. STEADY SHOT (Menu display) (Note2) OFF | 13. DIGITAL EFFECT (CF-66/67 board) (Note4) OFF |
| 7. DISPLAY (Menu display) (Note3) V-OUT/LCD | 14. 16 : 9 WIDE (MENU display) OFF |

Note1: VIDEO LIGHT model (CCD-TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P) only.

Note2: STEADY SHOT model (CCD-TRV57/TRV57P/TRV67/TRV87/TRV87P) only.

Note3: TRV model (CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P) only.

Note4: DIGITAL EFFECT model (CCD-TRV87/TRV87P) only.

2. Order of Adjustments

Basically carry out adjustments in the order given.

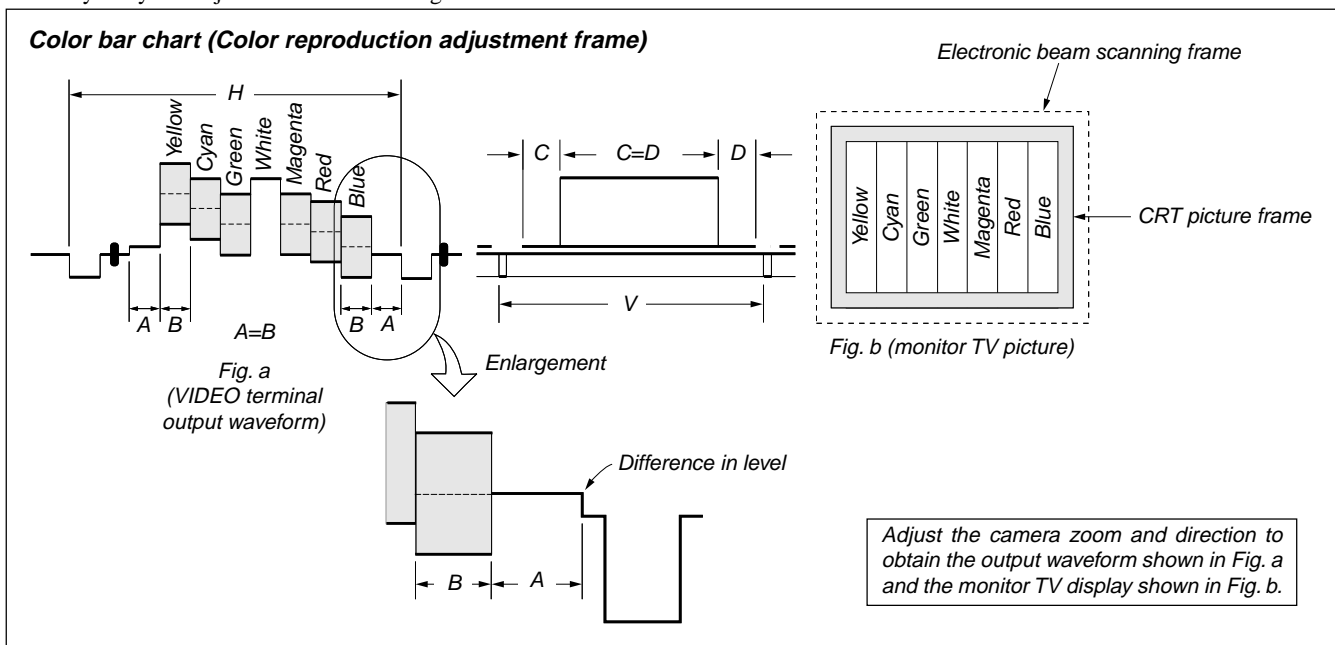


Fig.5-1-5.

3. Subjects

- 1) Color bar chart (Color reproduction adjustment frame)
When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 5-1-5. (Color reproduction adjustment frame)
- 2) Clear chart (Color reproduction adjustment frame)
Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time.)
- 3) Flange back adjustment chart
Make the chart shown in Fig. 5-1-6 using A0 size (1189mm x 841mm) black and white vellum paper.

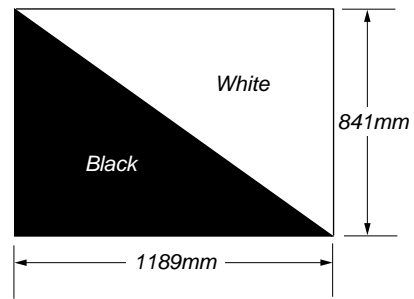


Fig. 5-1-6.

Note: Use matte vellum paper bigger than A0, and make sure the edges of the black and white paper joined together are not rough.

1-2. INITIALIZATION OF D, E, F, 7 PAGE DATA

1. Initializing the D, E, F, 7 Page Data

Note 1: If “Initializing the D, E, F, 7 Page Data” is performed, all data of the D page, E page, F page and 7 page will be initialized. (It is impossible to initialize a single page.)

Note 2: If the D, E, F, 7 page data has been initialized, “Modification of D, E, F, 7 Page Data” and all adjustments need to be performed again.

Adjusting page	D
Adjusting Address	00 to 85
Adjusting page	F
Adjusting Address	00 to FF
Adjusting page	E
Adjusting Address	00 to FF
Adjusting page	7
Adjusting Address	00 to FF

Initializing Method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 6, address: 00, and set data: 55.
- 3) Select page: 6, address: 01, set data: 55, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: 6, address: 02, and check that the data is 01.
- 5) Select page: 2, address: 00, and set data: 29.
- 6) Select page: 2, address: 01, set data: 29, and press the PAUSE button.
- 7) Perform “Modification of D, E, F, 7 Page Data”.

2. Modification of D, E, F, 7 Page Data

If the D, E, F, 7 page data has been initialized, change the data of the “Fixed data-2” address shown in the following tables by manual input.

Modifying Method:

- 1) Before changing the data, select page: 0, address: 01, and set data: 01.
- 2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
Note: If copy the data built in the different model, the camcorder may not operate.
- 3) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification of D, E, F, 7 Page data

- 1) Select page: 2, address: 00, and set data: 29.
- 2) Select page: 2, address: 01, and set data: 29, and press the PAUSE button of the adjustment remote commander.

Note: If the following symptoms occur after completing of the “Modification of D, E, F, 7 page data”, check that the data of the “Fixed data-2” addresses of D page are same as those of the same model of the same destination.

- 1) The battery end mark on the LCD or viewfinder screen is flashing.
- 2) The power is shut off so that unit cannot operate.

3. D Page Table

Note1: Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”.)

Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”.)

Address	Remark	
	Initial value	
00 to 0F		
10	00	Test mode
11		Fixed data-1
12		(Initialized data)
13		Fixed data-2
14		(Modified data. Copy the data built in
15		the same model.)
16		Fixed data-1
17		Fixed data-2
18		(Modified data. Copy the data built in
19		the same model.)
1A		
1B		
1C		
1D		
1E		
1F		
20		
21		Fixed data-1
22		Fixed data-2
23		Fixed data-1
24		(Initialized data)
25		
26		
27		
28		Fixed data-2
29		(Modified data. Copy the data built in
		the same model.)
2A		Fixed data-1
2B		(Initialized data)
2C		
2D		
2E		
2F		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
3A		
3B		
3C		
3D		
3E		
3F		

Address	Remark	
	Initial value	
40		Fixed data-2
41		(Modified data. Copy the data built in the same model.)
42		Fixed data-1
43		Fixed data-2
44		(Modified data. Copy the data built in the same model.)
45		
46		
47		
48		
49		
4A		Fixed data-1
4B		(Initialized data)
4C		
4D		Fixed data-2
4E		
4F		Fixed data-1
50		Fixed data-2
51		(Modified data. Copy the data built in the same model.)
52		
53		
54		
55		
56		
57		Fixed data-1
58		Fixed data-2
59		(Modified data. Copy the data built in the same model.)
5A		
5B		
5C		
5D		Fixed data-1
5E		(Initialized data)
5F		
60		
61		
62		
63		
64		
65		Fixed data-2
66		Fixed data-1
67		Fixed data-2
68		(Modified data. Copy the data built in the same model.)
69		
6A		Fixed data-1
6B		(Initialized data)
6C		
6D		
6E		
6F		
70		
71		
72		
73		
74		
75		
76		

Address	Remark	
	Initial value	
77		Fixed data-1
78		(Initialized data)
79		
7A		
7B		
7C		
7D		
7E		
7F		
80		
81		
82		
83		
84		Fixed data-2
85		Fixed data-1

Table. 5-1-2

4. F Page table

Note1: Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”.)
 Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”.)

Address	Remark	
	Initial value	
00 to 0F		
10	00	Emergency memory address
11	00	
12	00	
13	00	
14	00	
15	00	
16	00	
17	00	
18	00	
19	00	
1A	00	
1B	00	
1C		Fixed data-2
1D		(Modified data. Copy the data built in the same model.)
1E		Fixed data-1
1F		Fixed data-2
20		Fixed data-1
21		(Initialized data)
22		
23		
24		Fixed data-2
25		Fixed data-1
26		Fixed data-2
27		Fixed data-1
28		(Initialized data)
29		
2A		
2B		
2C		
2D		
2E		
2F		
30		
31		
32		
33		Fixed data-2
34		Fixed data-1
35		(Initialized data)
36		
37		
38	68	HALL adj.
39	80	
3A	8D	
3B		Fixed data-2
3C	80	AWB & LV standard data input
3D	7A	
3E	2B	
3F	80	
40	65	
41	80	

Address	Remark	
	Initial value	
42	8D	Auto white balance adj.
43	87	
44		Fixed data-1 (Initialized data)
45		
46		
47	33	Color reproduction adj.
48		Fixed data-1
49	34	Color reproduction adj.
4A		Fixed data-1 (Initialized data)
4B		
4C		
4D	8C	28MHz origin osc. Adj.
4E	28	Flange back adj.
4F	07	
50	3A	
51	4A	
52	12	
53	0B	
54	54	
55	00	
56	19	
57	00	
58	37	
59	00	
5A	00	
5B	04	
5C	00	
5D	00	
5E		Fixed data-2
5F		
60		Fixed data-1 (Initialized data)
61		
62	0A	Switching position adj.
63	00	
64	83	CAP FG offset adj.
65	40	AFC f ₀ adj.
66	77	Filter f ₀ adj.
67	6B	Y OUT level adj.
68	9A	C OUT level adj.
69		Fixed data-2
6A	B4	REC Y current adj.
6B	B4	
6C		Fixed data-1
6D		Fixed data-2 (Modified data. Copy the data built in the same model.)
6E		
6F		
70		
71	A0	
72		Fixed data-1
73		Fixed data-2 (Modified data. Copy the data built in the same model.)
74		
75		
76		
77		
78		
79		

Address	Remark	
	Initial value	
7A		Fixed data-2
7B	A6	1.5MHz deviation adj.
7C	94	1.7MHz deviation adj.
7D	80	BPF f ₀ adj.
7E	41	IR video deviation Adj.
7F	33	IR audio deviation Adj.
80	C7	IR video carrier freq. Adj.
81		Fixed data-2
82		Fixed data-1
83		(Initialized data)
84		
85		
86		
87		
88		
89		
8A		
8B		Fixed data-2
8C		Fixed data-1
8D		(Initialized data)
8E		Fixed data-2
8F		(Modified data. Copy the data built in the same model.)
90		Fixed data-1
91		(Initialized data)
92		
93		Fixed data-2
94		(Modified data. Copy the data built in the same model.)
95		
96		Fixed data-1
97		(Initialized data)
98		
99		
9A		
9B		
9C		
9D		
9E		Fixed data-2
9F		(Modified data. Copy the data built in the same model.)
A0		
A1		Fixed data-1
A2		(Initialized data)
A3		
A4		
A5		
A6		
A7		
A8		
A9		
AA		
AB		
AC		
AD		
AE		
AF		
B0		

Address	Remark	
	Initial value	
B1		Fixed data-1
B2		(Initialized data)
B3		
B4		
B5		
B6		
B7		
B8		Fixed data-2
B9		(Modified data. Copy the data built in the same model.)
BA		
BB		
BC		
BD		Fixed data-1
BE		(Initialized data)
BF		
C0		
C1		
C2		
C3		
C4		
C5		
C6		
C7		
C8		
C9		
CA		
CB		
CC		
CD		Fixed data-2
CE		Fixed data-1
CF		(Initialized data)
D0		
D1		
D2		
D3		
D4		
D5		
D6		
D7	FD	Color reproduction adj.
D8	F4	
D9	0F	
DA	31	
DB		Fixed data-2
DC		Fixed data-1
DD		(Initialized data)
DE		Fixed data-2
DF		
E0		Fixed data-1
E1		Fixed data-2
E2		Fixed data-1
E3		(Initialized data)
E4		
E5		
E6		
E7		
E8		

Address	Remark	
	Initial value	
E9		Fixed data-1 (Initialized data)
EA		
EB		
EC		
ED		
EE		
EF		
F0		
F1		
F2		
F3		Fixed data-2 (Modified data. Copy the data built in the same model.)
F4		
F5		
F6		
F7		Fixed data-1 (Initialized data)
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

Table. 5-1-3

5. E Page Table

Note: Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”.)

Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”.)

Address	Remark	
	Initial value	
00		Fixed data-1 (Initialized data)
01		
02		Fixed data-2 (Modified data. Copy the data built in the same model.)
03		
04		
05		
06		
07		Fixed data-1
08		Fixed data-2
09	41	
0A		Fixed data-1 (Initialized data)
0B		
0C		
0D		
0E		
0F		Fixed data-2 (Modified data. Copy the data built in the same model.)
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		Fixed data-1 (Initialized data)
1A		
1B		
1C		
1D		
1E		
1F		
20		
21		
22		
23		Fixed data-2
24		
25		Fixed data-1 (Initialized data)
26		
27		
28		
29		
2A		
2B		
2C		Fixed data-2
2D		
2E		
2F		
30		Fixed data-2
31		Fixed data-1
32		(Initialized data)

Address	Initial value	Remark
33		Fixed data-1
34		Fixed data-2
35		Fixed data-1
36		Fixed data-2
37		Fixed data-1
38		Fixed data-2
39		(Modified data. Copy the data built in the same model.)
3A		Fixed data-1
3B		Fixed data-2
3C		(Modified data. Copy the data built in the same model.)
3D		(Modified data. Copy the data built in the same model.)
3E		Fixed data-1
3F		(Initialized data)
40		
41		Fixed data-2
42		Fixed data-1
43		(Initialized data)
44		
45		
46		
47		
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		
50		
51		Fixed data-2
52		Fixed data-1
53		(Initialized data)
54		
55		
56		
57		
58		
59		Fixed data-2
5A		Fixed data-1
5B		(Initialized data)
5C		
5D		
5E		
5F		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		

Address	Initial value	Remark
6A		Fixed data-1
6B		(Initialized data)
6C		
6D		
6E		
6F		
70		
71		
72		Fixed data-2
73		Fixed data-1
74		(Initialized data)
75		
76		
77		
78		
79		
7A		
7B		
7C		Fixed data-2
7D		(Modified data. Copy the data built in the same model.)
7E		(Modified data. Copy the data built in the same model.)
7F		Fixed data-1
80		Fixed data-2
81		Fixed data-1
82		(Initialized data)
83		
84		
85		
86		
87		
88		
89		
8A		
8B		
8C		Fixed data-2
8D		(Modified data. Copy the data built in the same model.)
8E		(Modified data. Copy the data built in the same model.)
8F		Fixed data-1
90		Fixed data-2
91		Fixed data-1
92		(Initialized data)
93		Fixed data-2
94		Fixed data-1
95		(Initialized data)
96		
97		
98		
99		
9A		
9B		
9C		
9D		
9E		
9F		
A0		
A1		

Address	Remark		
	Initial value		
A2		Fixed data-1 (Initialized data)	
A3			
A4			
A5			
A6			
A7			
A8			
A9			
AA			
AB			
AC	08		
AD	8D		
AE			
AF			
B0			
B1			
B2			
B3			
B4			
B5			Fixed data-2
B6			Fixed data-1
B7			Fixed data-2
B8			Fixed data-1
B9		Fixed data-2	
BA		Fixed data-1	
BB		Fixed data-2	
BC		Fixed data-1	
BD		(Initialized data)	
BE		Fixed data-2	
BF		(Modified data. Copy the data built in the same model.)	
C0			
C1			
C2			
C3			
C4			
C5			
C6			
C7			
C8		Fixed data-1	
C9		Fixed data-2	
CA		(Modified data. Copy the data built in the same model.)	
CB		Fixed data-1	
CC		Fixed data-2	
CD		(Modified data. Copy the data built in the same model.)	
CE		Fixed data-1	
CF		(Initialized data)	
D0		Fixed data-2	
D1		(Modified data. Copy the data built in the same model.)	
D2		Fixed data-1	
D3		Fixed data-2	
D4			
D5			Fixed data-1
D6			Fixed data-2

Address	Remark		
	Initial value		
D7		Fixed data-2 (Modified data. Copy the data built in the same model.)	
D8		Fixed data-1	
D9		Fixed data-2	
DA			
DB	FF		
DC	FF		
DD	A9		
DE		Fixed data-1	
DF		Fixed data-2	
E0		(Modified data. Copy the data built in the same model.)	
E1		Fixed data-1	
E2		(Initialized data)	
E3		Fixed data-2	
E4		(Modified data. Copy the data built in the same model.)	
E5		Fixed data-1	
E6		(Initialized data)	
E7			
E8			
E9			
EA			
EB			
EC			
ED			
EE			
EF	99		
F0			Fixed data-1
F1	02		
F2		Fixed data-1	
F3	CA		
F4		Fixed data-1	
F5	E5		
F6	CC		
F7	A9		
F8	E5		
F9	A9		
FA	A9		
FB		Fixed data-1	
FC		(Initialized data)	
FD			
FE			
FF			

Table. 5-1-4

6. 7 Page Table

Note: Fixed data-1: Initialized data. (Refer to “1. Initializing the D, E, F, 7 Page Data”.)

Fixed data-2: Modified data. (Refer to “2. Modification of D, E, F, 7 Page Data”.)

Address	Remark	
	Initial value	
00		Fixed data-1
01		(Initialized data)
02		
03		Fixed data-2
04		Fixed data-1
05		Fixed data-2
06		(Modified data. Copy the data built in
07		the same model.)
08		
09		Fixed data-1
0A		Fixed data-2
0B		(Modified data. Copy the data built in
0C		the same model.)
0D		Fixed data-1
0E		(Initialized data)
0F		
10		Fixed data-2
11		
12		Fixed data-1
13		(Initialized data)
14		Fixed data-2
15		Fixed data-1
16		(Initialized data)
17		
18		
19		
1A		
1B		
1C		
1D		
1E		
1F		
20		
21		
22		
23		
24		
25		
26		
27		
28		Fixed data-2
29		(Modified data. Copy the data built in
2A		the same model.)
2B		Fixed data-1
2C		Fixed data-2
2D		(Modified data. Copy the data built in
2E		the same model.)
2F		Fixed data-1
30		(Initialized data)
31		
32		
33		

Address	Remark	
	Initial value	
34		Fixed data-1
35		(Initialized data)
36		
37		
38		Fixed data-2
39		Fixed data-1
3A		(Initialized data)
3B		
3C		
3D		
3E		
3F		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
4A		
4B		
4C		
4D		
4E		
4F		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
5A		
5B		
5C		
5D		
5E		
5F		Fixed data-2
60		Fixed data-1
61		(Initialized data)
62		
63		Fixed data-2
64		Fixed data-1
65		(Initialized data)
66		
67		
68		
69		
6A		
6B		Fixed data-2

Address	Remark	
	Initial value	
6C		Fixed data-2
6D		(Modified data. Copy the data built in the same model.)
6E		
6F		
70		Fixed data-1 (Initialized data)
71		
72		
73		
74		
75		
76		
77		Fixed data-2
78		(Modified data. Copy the data built in the same model.)
79	11	
7A		Fixed data-2
7B		Fixed data-1
7C		(Initialized data)
7D		
7E		
7F		
80		
81		
82		
83		
84		
85		Fixed data-2
86		Fixed data-1
87		(Initialized data)
88		
89		
8A		
8B		
8C		
8D		
8E		
8F		
90		
91		
92		
93		
94		
95		
96		
97		
98		
99		
9A		
9B		
9C		
9D		
9E		
9F		
A0		
A1		
A2		

Address	Remark	
	Initial value	
A3		Fixed data-1
A4		(Initialized data)
A5		
A6		
A7		
A8		
A9		
AA		
AB		Fixed data-2
AC		Fixed data-1
AD		(Initialized data)
AE		
AF		
B0		
B1		
B2		
B3		
B4		
B5		Fixed data-2
B6		(Modified data. Copy the data built in the same model.)
B7		Fixed data-1
B8		Fixed data-2
B9		(Modified data. Copy the data built in the same model.)
BA		
BB		
BC		Fixed data-1
BD		Fixed data-2
BE		(Modified data. Copy the data built in the same model.)
BF		
C0		
C1		
C2		
C3		
C4		
C5		Fixed data-1
C6		Fixed data-2
C7		(Modified data. Copy the data built in the same model.)
C8		
C9		
CA		Fixed data-1
CB		
CC		Fixed data-2
CD		(Modified data. Copy the data built in the same model.)
CE		
CF		
D0		
D1		Fixed data-1
D2		(Initialized data)
D3		
D4		
D5	6D	VCO adj.(EVF)
D6		Fixed data-2
D7		Fixed data-1
D8	93	RGB AMP adj.(EVF)
D9		Fixed data-1

Address	Remark	
	Initial value	
DA	8D	White balance adj.(EVF)
DB	83	
DC	1D	Contrast adj.(EVF)
DD		Fixed data-1 (Initialized data)
DE		
DF	CA	Back light consumption current adj. (EVF)
E0	0A	
E1	13	
E2		Fixed data-1 (Initialized data)
E3		
E4		
E5	6E	VCO adj.(LCD)
E6		Fixed data-1
E7	8E	V-COM adj.(LCD)
E8	29	RGB AMP adj.(LCD)
E9		Fixed data-1
EA	C3	COM AMP adj.(LCD)
EB	60	White balance adj.(LCD)
EC	65	
ED	50	Contrast adj.(LCD)
EE		Fixed data-1 (Initialized data)
EF		
F0		Fixed data-2
F1		Fixed data-1 (Initialized data)
F2		
F3		Fixed data-2
F4		Fixed data-1 (Initialized data)
F5		
F6		
F7		
F8		
F9		
FA		
FB		
FC		
FD		
FE		
FF		

Table. 5-1-5

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, Check that the specified value of “28MHz Origin Oscillation Adjustment”, “Y OUT level Adjustment” and “C OUT level Adjustment” of “VIDEO SYSTEM ADJUSTMENT” are satisfied.

1. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and offset.

Subject	Not required
Measurement Point	Display data of page 1
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	38, 39, 3A
Specified Value	When the data of page: 6, address: 01 is “01”: 86 to 8A (Note2) When the data of page: 6, address: 01 is “03”: 15 to 19 (Note2)

Note1: Displayed data of page 1 of the adjustment remote commander.

1 : 00 : XX
 |
 └─── Display data

Note2: The PAUSE button of the Adjustment remote commander must be pressed.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 6, address: 94, and set data: 88.
- 3) Select page: 6, address: 95, and set data: 17.
- 4) Select page: 6, address: 01, set data: 6D, and press the PAUSE button of the adjustment remote commander. (The HALL adjustment is performed and the adjustment data is stored in page: F, address: 38 to 3A.)
- 5) Select page: 6, address: 02, and check that the data is “01”.
- 6) Select page: 6, address: 01, set data: 00, and press the PAUSE button.

Checking method:

- 1) Select page: 0, address: 03, and set data: 03.
- 2) Select page: 6, address: 01, set data: 01, and press the PAUSE button.
- 3) Select page: 1, and check that the display data (Note1) satisfies the specified value.
- 4) Select page: 6, address: 01, set data: 03, and press the PAUSE button.
- 5) Select page: 1, and check that the display data (Note1) satisfies the specified value.

Processing after Completing Adjustments

- 1) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
- 2) Select page: 6, address: 94, and set data: 00.
- 3) Select page: 6, address: 95, and set data: 00.
- 4) Select page: 0, address: 01, and set data: 00.
- 5) Select page: 0, address: 03, and set data: 00.

2. Flange Back Adjustment (Using Minipattern Box)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart with ND filter for the minipattern box (Note1)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	4E to 5D

Note1: Dark Siemens star chart.

Note2: Make the lens horizontal and perform this adjustment.

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Preparations before adjustments:

The minipattern box is installed as shown in the following figure.

Note: The attachment lenses are not used.

Specified voltage: The specified voltage varies according to the minipattern box, so adjust the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

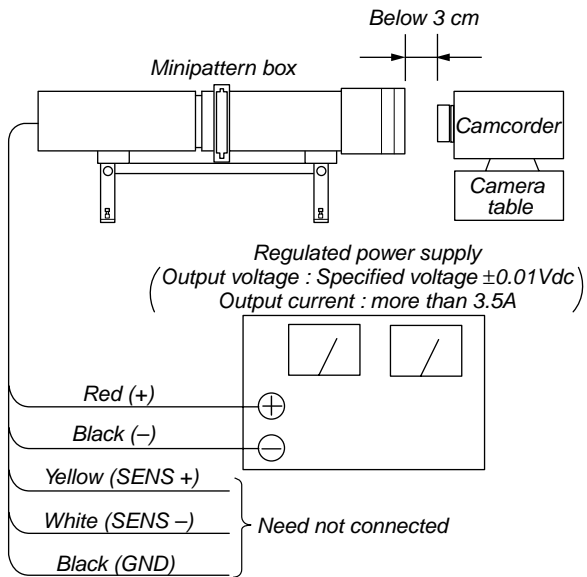


Fig. 5-1-7.

Adjusting method:

- 1) Install the minipattern box so that the distance between it and the front of the lens of the camcorder is less than 3cm.
- 2) Make the height of the minipattern box and the camcorder equal.
- 3) Check that the output voltage of the regulated power supply is the specified voltage.
- 4) Check that at both the zoom lens TELE end and WIDE end, the center of the Siemens star chart and center of the exposure screen coincide.
- 5) Select page: 0, address: 01, and set data: 01.
- 6) Check that the data of page: F, address: 4E to 5D is the initial value (See table below).

Address	Data	Address	Data
4E	28	56	19
4F	07	57	00
50	3A	58	37
51	4A	59	00
52	12	5A	00
53	0B	5B	04
54	54	5C	00
55	00	5D	00

- 7) Select page: 6, address: 02, and check that the data is "00".
- 8) Select page: 6, address: 01, set data: 13, and press the PAUSE button of the adjustment remote commander.
- 9) Select page: 6, address: 01, set data: 27, and press the PAUSE button.
(The adjustment data will be automatically input to page: F, addresses: 4E to 5D.)
- 10) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments:

- 1) Select page: 0, address: 01, and set data: 00.
- 2) Turn off the power and turn on again.
- 3) Perform "Flange Back Check".

3. Flange Back Adjustment (Using Flange Back Adjustment Chart and Subject More Than 500m Away)

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment (1)

Subject	Flange back adjustment chart (2.0 m from the front of the lens) (Luminance: 350 ± 50 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	4E to 5D

Note: Make the lens horizontal and perform this adjustment.

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Adjusting method:

- 1) Check that at both the zoom lens TELE end and WIDE end, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Check that the data of page: F, address: 4E to 5D is the initial value (See table below).

Address	Data	Address	Data
4E	28	56	19
4F	07	57	00
50	3A	58	37
51	4A	59	00
52	12	5A	00
53	0B	5B	04
54	54	5C	00
55	00	5D	00

- 4) Select page: 6, address: 02, and check that the data is "00".
- 5) Select page: 6, address: 01, set data: 13, and press the PAUSE button of the adjustment remote commander.
- 6) Select page: 6, address: 01, set data: 15, and press the PAUSE button.
(The adjustment data will be automatically input to page: F, addresses: 4E to 5D.)
- 7) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments:

- 1) Select page: 0, address: 01, and set data: 00.
- 2) Turn off the power and turn on again.
- 3) Perform "Flange Back Adjustment (2)".

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	4E to 5D

Note: Make the lens horizontal and perform this adjustment.

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Adjusting method:

- 1) Set the zoom lens to the TELE end and expose a subject that is more than 500m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: 6, address: 02, and check that the data is "00".
- 4) Select page: 6, address: 01, set data: 13, and press the PAUSE button of the adjustment remote commander.
- 5) Place a ND filter on the lens so that the optimum image is obtain.
- 6) Select page: 6, address: 01, set data: 29, and press the PAUSE button.
(The adjustment data will be automatically input to page: F, addresses: 4E to 5D.)
- 7) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments:

- 1) Select page: 0, address: 01, and set data: 00.
- 2) Turn off the power and turn on again.
- 3) Perform "Flange Back Check".

4. Flange Back Check

Subject	Siemens star (2.0 m from the front of the lens) (Luminance : approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Switch setting:

- 1) NIGHT SHOT OFF
- 2) VIDEO LIGHT OFF

Checking method:

- 1) Place the Siemens star 2.0m from the front of the lens.
- 2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
- 3) Select page: 6, address: 40, and set data: 02.
- 4) Select page: 6, address: 41, and set data: 01.
- 5) Shoot the Siemens star with the zoom TELE end.
- 6) Turn on the auto focus.
- 7) Check that the lens is focused (Note).
- 8) Select page: 6, address: 21, and set data: 10.
- 9) Shoot the Siemens star with the zoom WIDE end.
- 10) Observe the TV monitor and check that the lens is focused.

Note: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjustment remote commander.

- 1) Select page: 0, address: 03, and set data: 0F.
- 2) Page 1 shows the state of the focus.
 - 1 : 00 : XX
 - Odd: Focused
 - Even: Unfocused

Processing after Completing Adjustments

- 1) Select page: 6, address: 21, and set data: 00.
- 2) Select page: 6, address: 40, and set data: 00.
- 3) Select page: 6, address: 41, and set data: 00.
- 4) Select page: 0, address: 03, and set data: 00.

5. Picture Frame Setting

Subject	Color bar chart (Color reproduction adjustment frame) (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, E=F

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Setting method:

- 1) Adjust the zoom and the camera direction, and set to the specified position.
- 2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "Color reproduction adjustment frame".

Check on the oscilloscope

1. Horizontal period

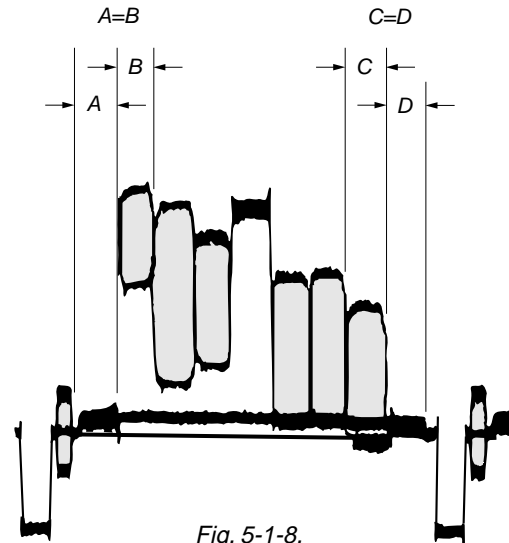


Fig. 5-1-8.

2. Vertical period

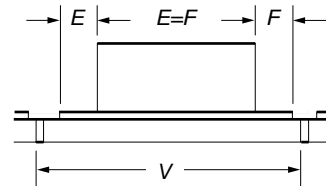


Fig. 5-1-9.

Check on the monitor TV (Underscanned mode)

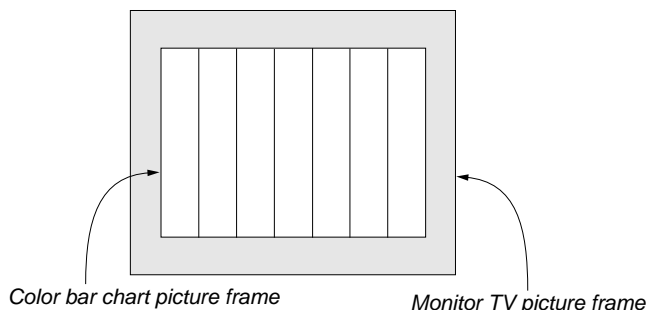


Fig. 5-1-10.

6. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	47, 49, D7, D8
Specified Value	All color luminance points should settle within each color reproduction frame.

Note: 760H model:

CCD-TRV87/TRV87P

510H TYPE P model:

CCD-TRV57/TRV57P/TRV67

510H TYPE S model:

CCD-TR317/TR517/TRV17/TRV37/TRV47

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 2B, set data: 17, and press the PAUSE button.
- 3) Select page: F, address: 8B, and note down the data.
- 4) Input the following data to page: F, address: 8B.

	Data
760H model	26
510H TYPE P model	29
510H TYPE S model	29

Note: Press the PAUSE button of the adjustment remote commander each time to set the data.

- 5) Select page: 6, address: 01, set data: 3D, and press the PAUSE button.
- 6) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
- 7) Select page: F, address: D9, set data: 0F, and press the PAUSE button.
- 8) Select page: F, address: DA, set data: 31, and press the PAUSE button.
- 9) Change the data of page: F, address: 47, 49, D7 and D8, and settle each color luminance point in each color reproduction frame.

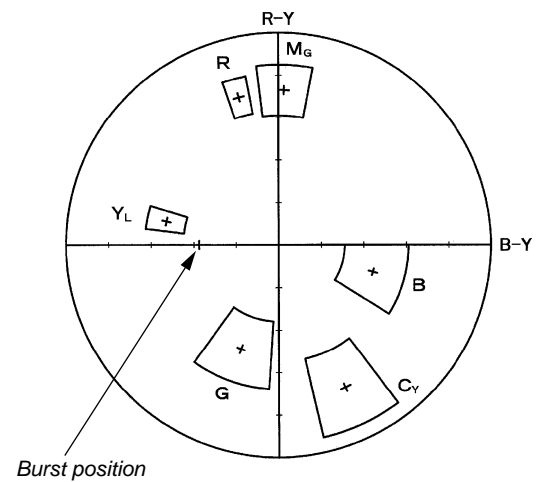
Note: Be sure to press the PAUSE button of the adjustment remote commander before changing the addresses. If not, the new data will not be written to the memory.

- 10) Select page: F, address: 8B, input the data noted down at step 3), and press the PAUSE button.

Processing after Completing Adjustments

- 1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 2) Select page: 0, address: 01, and set data: 00.

For 760H model and 510H TYPE S model



For 510H TYPE P model

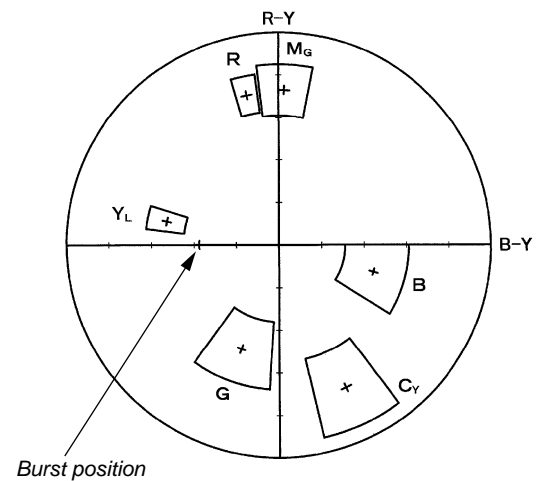


Fig. 5-1-11.

7. Auto White Balance & LV Standard Data Input

Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	F
Adjustment Address	3C to 41

Note1: This adjustment should be carried out upon completion of "6. Color Reproduction Adjustment".

Note2: Check that the data of page: 6, address: 02 is "00". If not, turn off the power and turn on again.

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 6, address: 01, set data: 11, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 6, address: 01, set data: 0D, and press the PAUSE button.
(When the standard data is take in, the data will be automatically input to page: F, address: 3C to 41.)
- 4) Select page: 6, address: 02, and check that the data is "01".

Processing after Completing Adjustments

- 1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 2) Select page: 0, address: 01, and set data: 00.
- 3) Perform "Auto White Balance Adjustment".

8. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.

If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Display data of page 1 (Note2)
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	42, 43
Specified Value	760H model: R ratio: 2BC0 to 2C40 B ratio: 6060 to 6120 510H TYPE P model: R ratio: 2A40 to 2AC0 B ratio: 5E20 to 5EE0 510H TYPE S model: R ratio: 2B60 to 2BE0 B ratio: 5EA0 to 5F60

Note1: Perform "Auto White Balance & LV Standard Data Input" before this adjustment.

Note2: Displayed data of page 1 of the adjustment remote commander.

1 : XX : XX

Display data

Note3: 760H model:

CCD-TRV87/TRV87P

510H TYPE P model:

CCD-TRV57/TRV57P/TRV67

510H TYPE S model:

CCD-TR317/TR517/TRV17/TRV37/TRV47

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Adjusting method:

- 1) Place the C14 filter for color temperature correction on the lens.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: F, address: B8 to BB, and note down the data of each address.
- 4) Input the following data to page: F, addresses: B8 to BB.

Address		B8	B9	BA	BB
Data	760H model	2C	00	60	C0
	510H TYPE P model	2A	80	5E	80
	510H TYPE S model	2B	A0	5F	00

Note: Press the PAUSE button of the adjustment remote commander each time to set the data.

- 5) Select page: 6, address: 01, set data: A7, and press the PAUSE button.
- 6) Select page: 6, address: 01, set data: A5, and press the PAUSE button.
(The auto white balance adjustment is performed and the adjustment data is stored in page: F, address: 42 and 43.)

- 7) Select page: 6, address: 02, and check that the data is "01".
- 8) Select page: 6, address: 01, set data: 3F, and press the PAUSE button.
- 9) Select page: 0, address: 03, and set data: 04.
- 10) Select page: 1, and check that the display data (Note2) satisfies the R ratio specified value.
- 11) Select page: 0, address: 03, and set data: 05.
- 12) Select page: 1, and check that the display data (Note2) satisfies the B ratio specified value.
- 13) Select page: F, address: B8 to BB, and input the data noted down at step 3).

Note: After setting each data, be sure to press the PAUSE button of the adjustment remote commander.

Processing after Completing Adjustments:

- 1) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
- 2) Select page: 0, address: 03, and set data: 00.
- 3) Select page: 0, address: 01, and set data: 00.

9. White Balance Check

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.4 and 0.1
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-12. A to C

Switch setting:

- 1) NIGHT SHOT OFF
- 2) DIGITAL ZOOM (Menu display) OFF
- 3) STEADY SHOT (Menu display) OFF
- 4) VIDEO LIGHT OFF

Checking method:

- 1) Check that the lens is not covered with either filter.
- 2) Select page: 6, address: 01, set data: 0F, and press the PAUSE button of the adjustment remote commander.
- 3) Check that the center of the white luminance point is within the circle shown Fig. 5-1-12. (A).
- 4) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
- 5) Select page: 6, address: 01, set data: 23, and press the PAUSE button.
- 6) Place the C14 filter on the lens.
- 7) Check that the center of the white luminance point settles in the circle shown Fig. 5-1-12. (B).
- 8) Remove the C14 filter, and place the ND filter 1.5 (1.0+0.4+0.1) on the lens.
- 9) Check that the white luminance point stopped moving, and then remove the ND filter 1.5.
- 10) Check that the center of the white luminance point settles within the circle shown Fig. 5-1-12. (C).

Processing after Completing Adjustments

- 1) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.

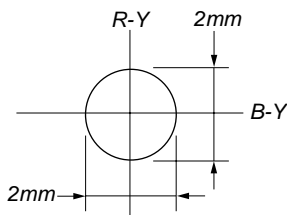


Fig. 5-1-12. (A)

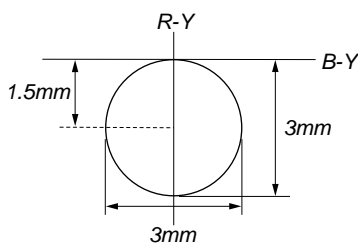


Fig. 5-1-12. (B)

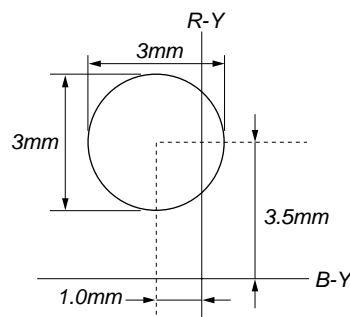


Fig. 5-1-12. (C)

10. Steady Shot Check

(CCD-TRV57/TRV57P/TRV67/TRV87/TRV87P)

Precautions on the Angular Velocity Sensor Replacement

There are two types of repair parts.

Type A ENC03JA

Type B ENC03JB

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, check the steady shot operations.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Steady Shot Check

Check the output of the angular velocity sensor.

Subject	Arbitrary
Measurement Point	Display data of page 1 (Note)
Measuring Instrument	Adjustment remote commander
Specified Value	PITCH data : 3100 to 4700 YAW data : 3100 to 4700

Note: Displayed data of page 1 of the adjustment remote commander.

1 : XX : XX

Display data

Switch setting:

- 1) ZOOM TELE end
- 2) STEADY SHOT (Menu display) ON

Checking method:

- 1) Select page: 0, address: 03, and set data: 11.
- 2) Select page: 1, and check that the PITCH data satisfies the specified value.
- 3) Select page: 0, address: 03, and set data: 12.
- 4) Select page: 1, and check that the YAW data satisfies the specified value.

Processing after Completing Adjustments

- 1) Select page: 0, address: 03, and set data: 00.
- 2) Check that the steady shot operations have been performed normally.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (CCD-TR517)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN982 of the VC-234 board.

Connect the Measuring Instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN982.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

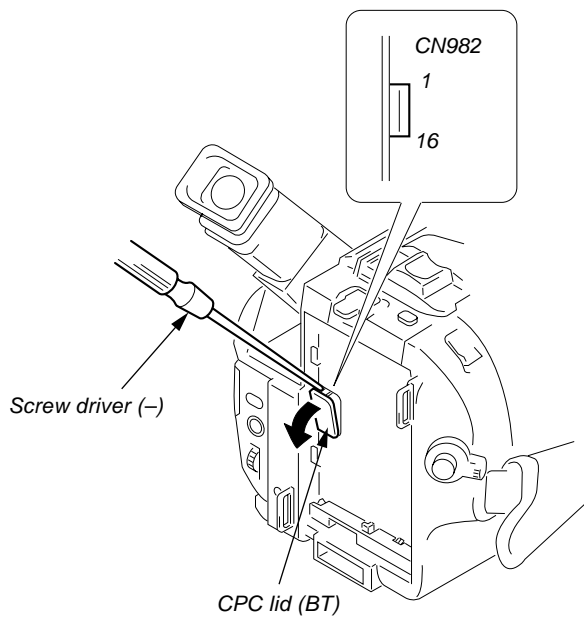


Fig. 5-1-13.

1. EVF Initial Data Input

Mode	Camera
Subject	Arbitrary
Adjustment Page	7
Adjustment Address	A5 to A7, AB, B5 to C3, D5 to DC, DE to E2

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, and input the data in the following table.
Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.
- 3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
A5	E3	Fixed data
A6	E3	Fixed data
A7	E3	Fixed data
AB	F7	Fixed data
B5	88	Fixed data
B6	4C	Fixed data
B7	00	Fixed data
B8	A0	Fixed data
B9	90	Fixed data
BA	64	Fixed data
BB	24	Fixed data
BC	00	Fixed data
BD	80	Fixed data
BE	05	Fixed data
BF	C9	Fixed data
C0	25	Fixed data
C1	00	Fixed data
C2	08	Fixed data
C3	33	Fixed data
D5	6D	VCO adj.
D6	63	Fixed data
D7	A7	Fixed data
D8	93	RGB AMP adj.
D9	0F	Fixed data
DA	8D	White balance adj.
DB	83	White balance adj.
DC	1D	Contrast adj.
DE	90	Fixed data
DF	CA	Backlight consumption current adj.
E0	0A	Backlight consumption current adj.
E1	13	Backlight consumption current adj.
E2	1F	Fixed data

2. VCO Adjustment (VF-141 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ⑮ of CN982 (VCO) on VC-234 board
Measuring Instrument	Frequency counter
Adjustment Page	7
Adjustment Address	D5
Specified Value	$f = 15734 \pm 30\text{Hz}$

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: D5, change the data and set the VCO frequency (f) to the specified value.
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

3. RGB AMP Adjustment (VC-141 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ⑩ of CN982 (EVF VG) on VC-234 board
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	D8
Specified Value	$A = 7.20 \pm 0.1\text{V}$

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: DE, set data: 10, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 7, address: D8, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
- 4) Press the PAUSE button.
- 5) Select page: 7, address: DE, set data: 90, and press the PAUSE button.
- 6) Select page: 0, address: 01, and set data: 00.

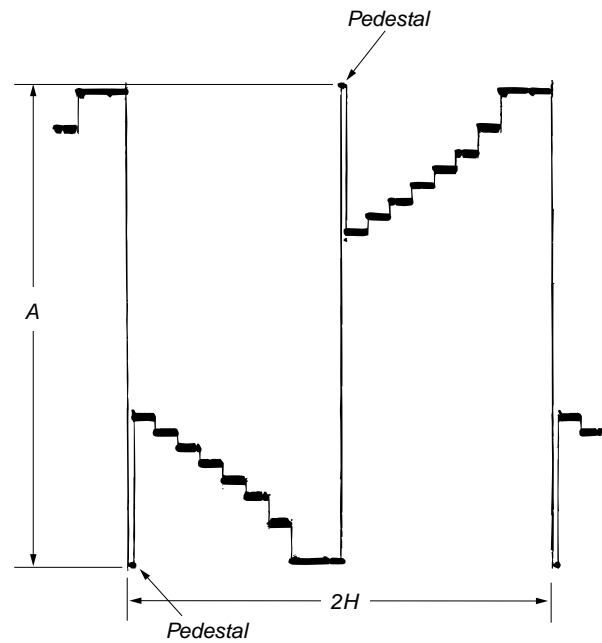


Fig. 5-1-14.

4. Contrast Adjustment (VF-141 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ⑭ of CN982 (EVF VG) on VC-234 board
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	DC
Specified Value	A=2.20 ± 0.1V

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: DE, set data: 10, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 7, address: DC, change the data and set the voltage (A) between the pedestal (0 IRE) and 100 IRE to the specified value.
(The data of address: DC should be "00" to "7F".)
- 4) Press the PAUSE button.
- 5) Select page: 7, address: DE, set data: 90, and press the PAUSE button.
- 6) Select page: 0, address: 01, and set data: 00.

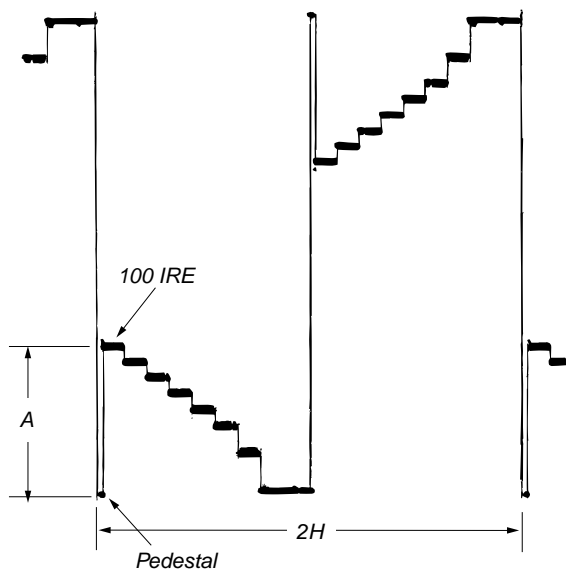


Fig. 5-1-15.

5. Backlight Consumption Current Adjustment (VF-141 board)

Set the backlight luminance and color temperature. If deviated, the image may become dark or bright.

Mode	Camera
Subject	Arbitrary
Measurement Point	+ Probe: Pin ⑭ of CN982 (EVF BL 4.75V) on VC-234 board - Probe: Pin ⑬ of CN982 (EVF BL) on VC-234 board
Measuring Instrument	Digital voltmeter
Adjustment Page	7
Adjustment Address	DF, E0, E1
Specified Value	BRIGHT mode : A=15.5 ± 1.0mVdc NORMAL mode : A=9.5 ± 1.0mVdc

Note1: Perform the adjustment in the following order.

Note2: Use the AC power adaptor.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: DF to E1, and set data to the initial value.
Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.

Address	DF	E0	E1
Data	CA	0A	13

- 3) Select page: 7, address: E0, change the data and set the voltage difference (A) between Pin ⑭ of CN982 (EVF BL 4.75V) and Pin ⑬ of CN982 (EVF BL) to the specified value of BRIGHT mode.
(The data of address: E0 should be "00" to "3F".)
- 4) Press the PAUSE button of the adjustment remote commander.
- 5) Read the data of page: 7, address: E0, and take it as D_{E0}.
- 6) Obtain D_{DF} corresponding to D_{E0} from the following table.

D _{E0}	D _{DF}
00 to 0F	C0 to CF (Note)
10 to 1F	D0 to DF (Note)
20 to 2F	E0 to EF (Note)
30 to 3F	F0 to FF (Note)

Note: The lower digit of D_{DF} is equal to it of D_{E0}.

Example: If D_{E0} is "1B".

$$D_{DF} = DB$$

- 7) Select page: 7, address: DF, set the data: D_{DF}, and press the PAUSE button.
- 8) Select page: 7, address: E1, change the data and set the voltage difference (A) between Pin ⑭ and Pin ⑬ to the specified value of NORMAL mode.
(The data of address: E1 should be "00" to "1F".)
- 9) Press the PAUSE button.
- 10) Select page: 0, address: 01, and set data: 00.

6. White Balance Adjustment (VF-141 board)

Correct the white balance.

If deviated, the reproduction of the EVF screen may degenerate.

Mode	Camera
Subject	Arbitrary
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	7
Adjustment Address	DA, DB
Specified Value	The EVF screen should not be colored.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: DA and DB, set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.

Address	DA	DB
Data	8D	83

- 3) Check that the EVF screen is not colored. If colored, change the data of page: 7, address: DA and DB so that the EVF screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.

- 4) Select page: 0, address: 01, and set data: 00.

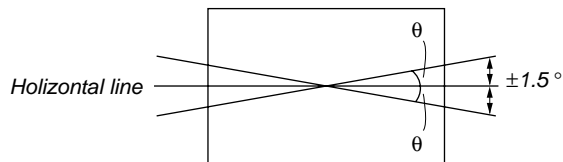
1-5. MONOCHROME ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT (CCD-TR317/TRV17/TRV37/TRV47/TRV57/ TRV57P/TRV67/TRV87/TRV87P)

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP) Monoscope section
Specified Value	$\pm 1.5^\circ$

Adjusting method:

- 1) Adjust RV904 (BRIGHT) (VF-129 board) so that the CRT can be seen easily and clearly.
- 2) Check that the difference between the horizontal line and the tilt of black mask satisfies the specified value.



Specified value : The image should be within $\pm 1.5^\circ$ of the horizontal line.

Fig. 5-1-16.

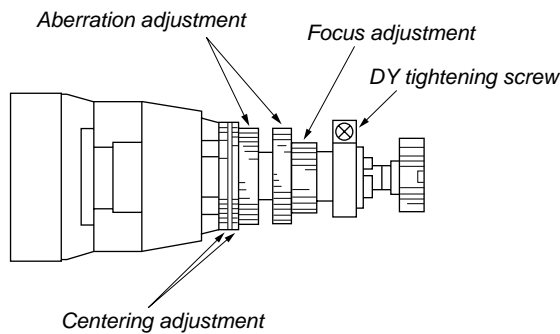
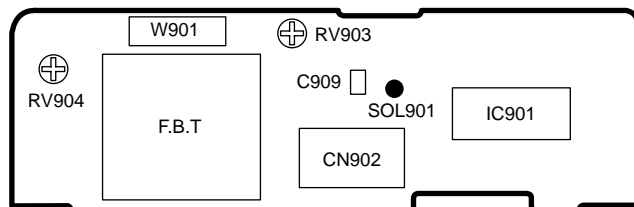


Fig. 5-1-17.

VF-129 BOARD



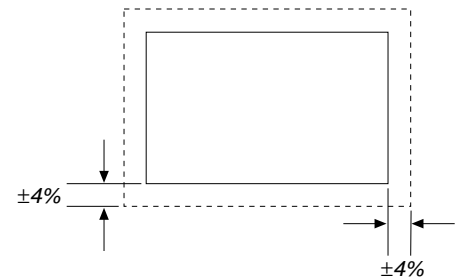
1-5-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP) Monoscope section
Specified Value	$\pm 4\%$

Adjusting method:

- 1) Use the centering adjustment ring and adjust so that the left, light, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-17.)

Note: As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value : $\pm 4\%$

Fig. 5-1-18.

1-5-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP) Monoscope section

Adjusting method:

- 1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-17.)

1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	$b1 \leq 2 \times a1$ $b2 \leq 0.8 \times a2$

Adjusting method:

- 1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
- 2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

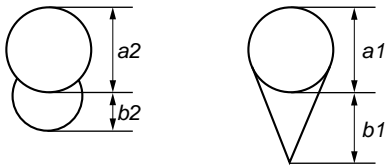


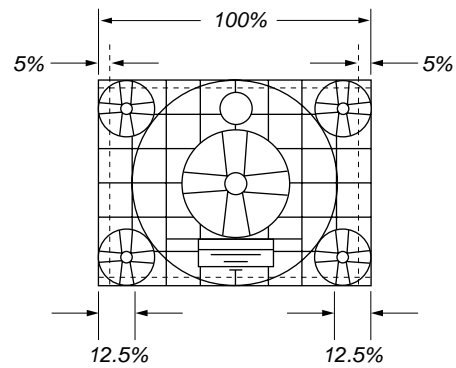
Fig. 5-1-19.

1-5-5. Horizontal Amplitude Adjustment (VF-129 board)

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP) Monoscope section
Adjusting Element	C909 (SOL901)
Specified Value	$10 \pm 6\%$

Adjusting method:

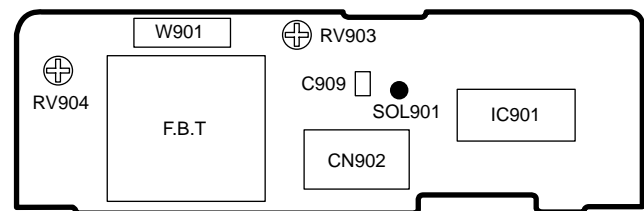
- 1) Rotate RV903, and adjust the top and bottom side of the monoscope image to the top and bottom edges of the display.
- 2) Rotate RV904 so that the brightness is the normal level.
- 3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to "short" or "open", so that the horizontal direction over scan becomes $10 \pm 6\%$ (Left and right totals).



SOL901	Size H
Open	Small
Short	Big

Fig. 5-1-20.

VF-129 BOARD



1-5-6. Vertical Amplitude Adjustment (VF-129 board)

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP) Monoscope section
Adjusting Element	RV903
Specified Value	$10 \pm 3\%$

Adjusting method:

- 1) Adjust RV903 so that the vertical direction over scan becomes $10 \pm 3\%$ (Top and bottom totals).

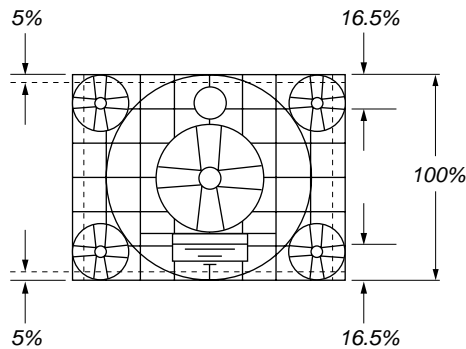


Fig. 5-1-21.

1-5-7. Brightness Adjustment (VF-129 board)

Mode	Playback
Signal	Alignment tape : For checking operation (WR5-5NSP) Monoscope section
Adjusting Element	RV904

Adjusting method:

- 1) Rotate RV904, and adjust so that the bright/dark sections of gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section of the gray scale cannot be differentiate.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

“1-5-5. Horizontal Amplitude Adjustment” and “1-5-6. Vertical Amplitude Adjustment” should be both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform “1-5-7. Brightness Adjustment” again. Moreover, check the focus, and if it found to be vague, perform “1-5-3. Focus Adjustment” and “1-5-4. Aberration Adjustment”.

1-6. LCD SYSTEM ADJUSTMENT (CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)

Note1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note 3: Set the LCD BRIGHT to the center.
Set the LCD COLOR (Menu display) to the center.

[Adjusting connector]

Most of the measuring points for adjusting the LCD display are concentrated in the following connector.

CN5502 of the PD-117 board

Connect the Measuring Instruments via the multi CPC jig (J-6082-311-A).

The following table shows the Pin No. and signal name of the connector.

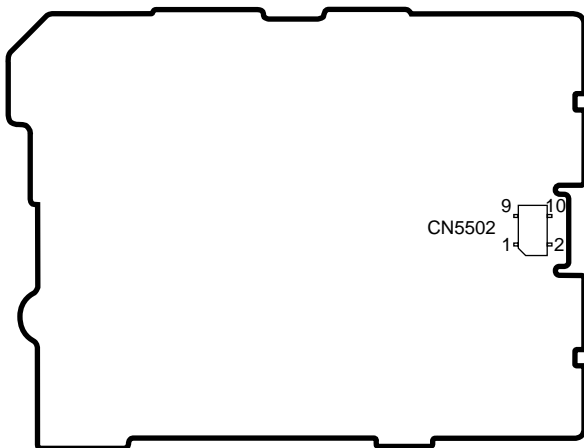
Pin No.	Signal Name	Pin No.	Signal Name
1	VB	2	XVD OUT
3	VG	4	PANEL COM
5	VR	6	N.C.
7	C SYNC	8	XHD OUT
9	GND	10	GND

[LCD type check]

By measuring the resistor value between Pin ⑥ of CN5502 and Pin ⑩ of CN5502, the type of LCD can be discriminated.

Resistor value	LCD type
1kΩ	LCD TYPE S
1.5kΩ	LCD TYPE C

PD-117 board



1. LCD Initial Data Input

Mode	Camera
Subject	Arbitrary
Adjustment Page	7
Adjustment Address	A8 to AB, C4 to D2, E3 to ED, EF to F3

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, and input the data in the following table.
Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.
- 3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
A8	E3	Fixed data
A9	E3	Fixed data
AA	E3	Fixed data
AB	F7	Fixed data
C4	45	Fixed data
C5	00	Fixed data
C6	90	Fixed data
C7	90	Fixed data
C8	66	Fixed data
C9	26	Fixed data
CA	00	Fixed data
CB	80	Fixed data
CC	13	Fixed data
CD	C9	Fixed data
CE	23	Fixed data
CF	1A	Fixed data
D0	08	Fixed data
D1	33	Fixed data
D2	33	Fixed data
E3	78	Fixed data
E4	91	Fixed data
E5	6E	VCO adj.
E6	63	Fixed data
E7	8E	V-COM adj.
E8	29	RGB AMP adj.
E9	00	Fixed data
EA	C3	COM AMP adj.
EB	60	White balance adj.
EC	65	White balance adj.
ED	50	Contrast adj.
EF	10	Fixed data
F0	6B	Fixed data
F1	9F	Fixed data
F2	1F	Fixed data
F3	DA	Fixed data

2. VCO Adjustment (PD-117 board)

Set the VCO free-run frequency. If deviated, the LCD screen will be blurred.

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ⑧ of CN5502 (XHD OUT)
Measuring Instrument	Frequency counter
Adjustment Page	7
Adjustment Address	E5
Specified Value	$f = 15734 \pm 30\text{Hz}$

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: E5, change the data and set the XHD OUT frequency (f) to the specified value.
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

3. RGB AMP Adjustment (PD-117 board)

Set the D range of the RGB decoder used to drive the LCD to the specified value. If deviated, the LCD screen will become blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ③ of CN5502 (VG) External trigger : Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	E8
Specified Value	LCD TYPE S: $A = 3.63 \pm 0.05\text{V}$ LCD TYPE C: $A = 3.00 \pm 0.05\text{V}$

Note1: Press the DISPLAY button and erase the screen indicators on the LCD screen.

Note2: Refer to "LCD type check" for the discrimination of the LCD type.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: E8, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
(The data of address: E8 should be "00" to "3F".)
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

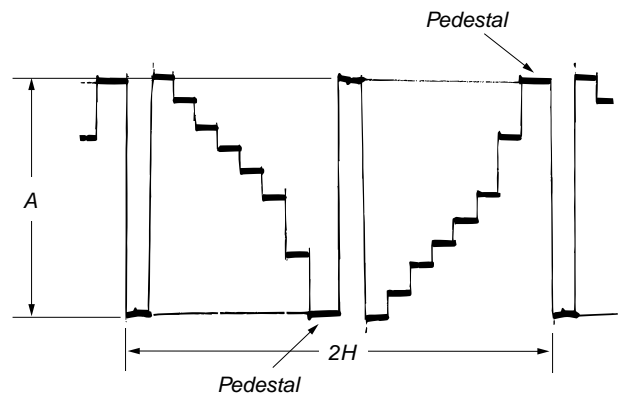


Fig. 5-1-22.

4. Contrast Adjustment (PD-117 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ③ of CN5502 (VG) External trigger : Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	ED
Specified Value	LCD TYPE S: $A = 3.68 \pm 0.07V$ LCD TYPE C: $A = 2.84 \pm 0.07V$

Note: Refer to “LCD type check” for the discrimination of the LCD type.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: ED, change the data and set the voltage (A) between the pedestal (0 IRE) and 100 IRE to the specified value.
(The data of address: ED should be “00” to “7F”.)
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

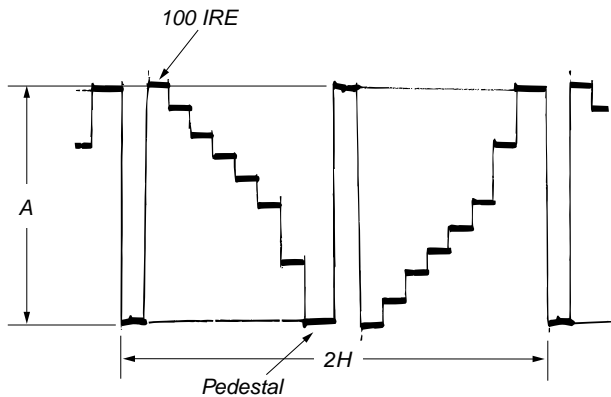


Fig. 5-1-23.

5. COM AMP Adjustment (PD-117 board)

Set the common electrode drive signal level of LCD to the specified value.

Mode	Camera
Subject	Arbitrary
Measurement Point	Pin ④ of CN5502 (PANEL COM)
Measuring Instrument	Oscilloscope
Adjustment Page	7
Adjustment Address	EA
Specified Value	LCD TYPE S: $A = 6.47 \pm 0.05V$ LCD TYPE C: $A = 5.09 \pm 0.05V$

Note: Refer to “LCD type check” for the discrimination of the LCD type.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: EA, change the data and set the PANEL COM signal level (A) to the specified value.
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

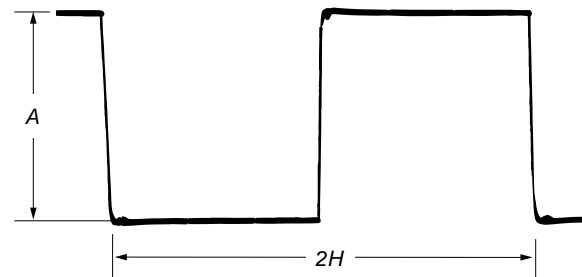


Fig. 5-1-24.

6. V-COM Adjustment (PD-117 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.

If deviated, the LCD display will move, producing flicker and conspicuous vertical lines.

Mode	Camera
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	7
Adjustment Address	E7
Specified Value	The brightness difference between the section A and section B is minimum.

Note1: Perform “RGB AMP Adjustment”, “Contrast Adjustment” and “COM AMP Adjustment” before this adjustment.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: E7, change the data so that the brightness of the section A and that of the section B is equal.
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

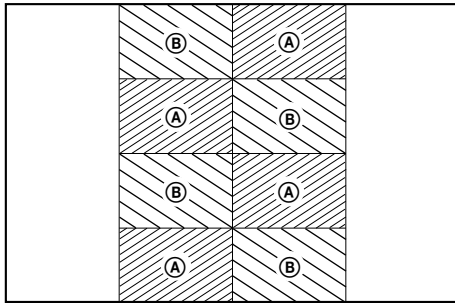


Fig. 5-1-25.

7. White Balance Adjustment (PD-117 board)

Correct the white balance.

If deviated, the LCD screen color cannot be reproduced.

Mode	Camera
Subject	Arbitrary
Measurement Point	Check on LCD display
Measuring Instrument	
Adjustment Page	7
Adjustment Address	EB, EC
Specified Value	The LCD screen should not be colored.

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them.

1. LCD panel
2. Light induction plate
3. IC5501

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 7, address: EB and EC, and set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.

Address	EB	EC
Data	60	65

- 3) Check that the LCD screen is not colored. If colored, change the data of page: 7, address: EB and EC so that the LCD screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjustment remote commander each time to set the data.

- 4) Select page: 0, address: 01, and set data: 00.

5-2. MECHANISM SECTION ADJUSTMENT

Mechanism Section adjustments, checks, and replacement of mechanism parts, refer to the separate volume "8mm Video Mechanism Adjustment Manual VII [B Mechanism]".

2-1. OPERATING WITHOUT CASSETTE

- 1) Refer to "Section 2. DISASSEMBLY" and supply the power with the cabinet assembly removed. (So that the mechanical deck can be operated.)
 - 2) Connect the adjustment remote commander to the LANC jack.
 - 3) Turn on the HOLD switch of the adjustment remote commander.
 - 4) Close the cassette compartment without loading a cassette and complete loading.
 - 5) Select page: 0, address: 01, and set data: 01.
 - 6) Select page: F, address: 22, set data: 81, and press the PAUSE button of the adjustment remote commander.
 - 7) Select page: D, address: 10, set data: 10, and press the PAUSE button of the adjustment remote commander.
 - 8) Disconnect the power supply of the unit.
- By carrying out the above procedure, the unit can be operated without loading a cassette.
- Be sure to carry out "Processing after Operations" after checking the operations.
- Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced VTR power supply On mode or forced camera power supply ON mode are to be used together.

Forced VTR power ON mode	12
Forced camera power ON mode	11

[Procedure after checking operations]

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 22, set data: 80, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.
- 5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for Adjustment

- 1) Clean the tape path face (tape guide, capstan shaft, pinch roller).
- 2) Connect the adjustment remote commander to the LANC jack.
- 3) Turn on the HOLD switch of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 01.
- 5) Select page: F, address: 22, set data: 88, and press the PAUSE button of the adjustment remote commander. (Be sure to perform "Processing after operation" after completing adjustments.)
- 6) Connect the oscilloscope to VC-234 board CN982 via CPC-7 jig (J-6082-382-A).
Channel 1: VC-234 board, CN982 Pin ⑥
External trigger: VC-234 board, CN982 Pin ⑩
- 7) Playback an alignment tape for tracking. (WR5-1NP)
- 8) Check that the oscilloscope RF waveform is flat at the entrance and exit.
If not flat, adjust according to the separate volume "8mm Video Mechanical Adjustment Manual VII [B Mechanism]".
- 9) Perform "Processing after operations", after completing adjustment.

CN982 of VC-234 board

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

Table 5-2-1.

[Procedure after operations]

- 1) Connect the adjustment remote commander, and turn on the HOLD switch.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: F, address: 22, set data: 80, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.
- 5) Remove the power supply from the unit.

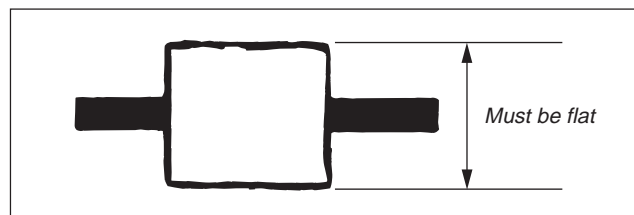


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring instruments for video section adjustments.

3-1-1. Equipment to Required

- 1) TV monitor
- 2) Oscilloscope (dual-phenomenon, band width above 30 MHz with delay mode) (Unless specified otherwise, use a 10 : 1 probe.)
- 3) Frequency counter
- 4) Pattern generator with video output terminal
- 5) Digital voltmeter
- 6) Audio generator
- 7) Audio level meter
- 8) Audio distortion meter
- 9) Audio attenuator
- 10) Regulated power supply
- 11) Alignment tapes
 - For tracking adjustment (WR5-1NP)
Parts code : 8-967-995-02
 - For video frequency characteristics adjustment (WR5-7NE)
Parts code : 8-967-995-13
 - For checking Standard 8 mode operations
 - For LP (WR5-4NL)
Parts code : 8-967-995-51
 - For SP (WR5-5NSP)
Parts code : 8-967-995-42
 - Note:** The following alignment tapes can also be used.
WR5-4NSP (8-967-995-41)
 - For checking Hi8 mode operations
 - For LP (WR5-8NLE)
Parts code : 8-967-995-52
 - For SP (WR5-8NSE)
Parts code : 8-967-995-43
 - For Checking AFM stereo operations (WR5-9NS)
Parts code : 8-967-995-23
 - For BPF adjustment (WR5-11NS)
Parts code : 8-967-995-71
- 12) Adjustment remote commander (J-6082-053-B)
- 13) CPC-7 jig (J-6082-382-A)
- 14) Power code (J-6082-223-A)
 - Note:** Connect the adjustment remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side.
- 15) AFM DEV jig (J-6082-312-A)
- 16) IR receiver jig (J-6082-383-A)

3-1-2. Precautions on Adjusting

Note1: TR model / TRV model

TR model: CCD-TR317/TR517

TRV model: CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P

- 1) The adjustments of this unit are performed in the VTR mode or camera mode.
To set to the VTR mode, set the power switch to "VTR or PLAYER" or set the "Forced VTR Power ON mode" using the adjustment remote commander (Note 2).
To set to the Camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjustment remote commander (Note 3).
After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode". (Note 4)
- 2) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if the front panel block (MA-374/375 board, power switch, microphone unit) has been removed. When removing the front panel block, disconnect the following connector.
 1. VC-234 board CN972 (20P 0.5mm)
- 3) The cabinet (R) (Camera function switch (CF-66/67 board), LCD block (TRV model only), Viewfinder) need not be connected. But removing the cabinet (R) (removing the VC-234 board CN975) means removing the lithium 3V power supply (CF-66/67 board BH001), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on history use (data of page: 2, address: A2 to AA). (Refer to the "Service Mode" for the data on the history use.)
To remove the cabinet (R), disconnect the following connectors.
 1. VC-234 board CN975 (45P, 0.5mm)
 2. DD-134 board CN933 (8P, 1.0mm)(TRV model only)
- 4) The video light board (VL-29 board) need not be connected. To remove, disconnect the following connector. (Except for CCD-TR317/TR517/TRV47)
 1. VL-29 board CN151 (8P, 0.5mm)
- 5) The lens block (CD-239/240 board) need not be connected. To remove, disconnect the following connectors.
 1. VC-234 board CN501 (14P, 0.5mm)
 2. VC-234 board CN551 (24P, 0.5mm)

Note2: Setting the "Forced VTR Power ON" mode (VTR mode)

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjustment remote commander.
The above procedure will enable the VTR power to be turned on with the front panel block removed.
After completing adjustments, be sure to exit the "Forced VTR Power ON mode".

Note3: Setting the "Forced Camera Power ON" mode (Camera mode)

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjustment remote commander.
The above procedure will enable the camera power to be turned on with the front panel block removed.
After completing adjustments, be sure to exit the "Forced Camera Power ON mode".

Note4: Exiting the "Forced Power ON" mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 0, address: 01, and set data: 00.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-234 board CN982. Connect the measuring instruments via the CPC-7 jig (J-6082-382-A). The following table lists the pin numbers and signal names of CN982.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

Table 5-3-1.

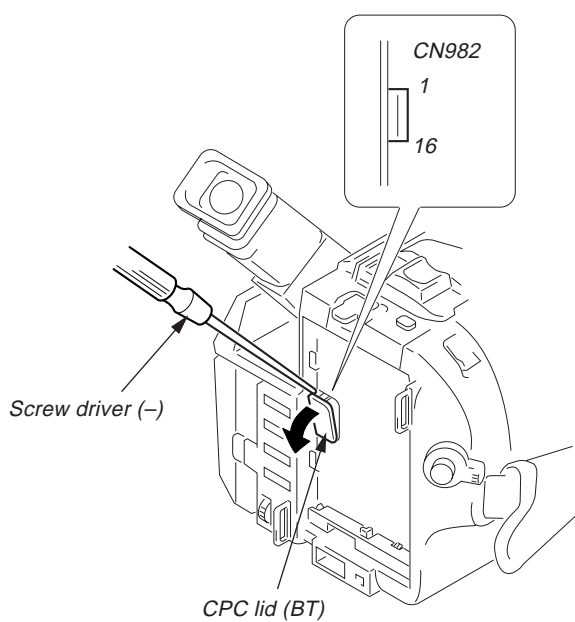


Fig. 5-3-1.

3-1-4. Connecting the Equipments

Connecting the measuring instruments as shown in Fig. 5-3-2 and perform the adjustments.

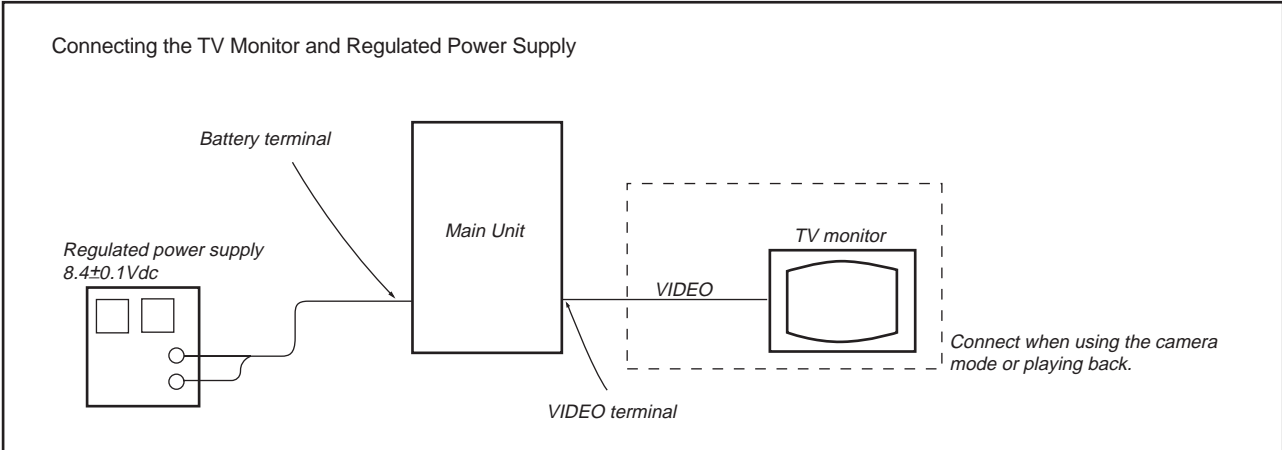


Fig. 5-3-2.

3-1-5. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Recording mode	Tape type	Tape speed	Usage
Tracking WR5-1NP	Standard 8 mm	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE	Hi8	ME	SP	Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP	Standard 8 mm	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE	Hi8	ME	SP	
Operation check (LP mode) WR5-4NL	Standard 8 mm	MP	LP	
Operation check (LP mode) WR5-8NLE	Hi8	ME	LP	
AFM stereo Operation check WR5-9NS	Standard 8 mm	MP	SP	
BPF adjustment WR5-11NS	Hi8	MP	SP	BPF adjustment

Fig. 5-3-3. Shows the color bar signals recorded on the alignment tape.

Note : Measure using the VIDEO terminal (Terminated at 75 Ω).

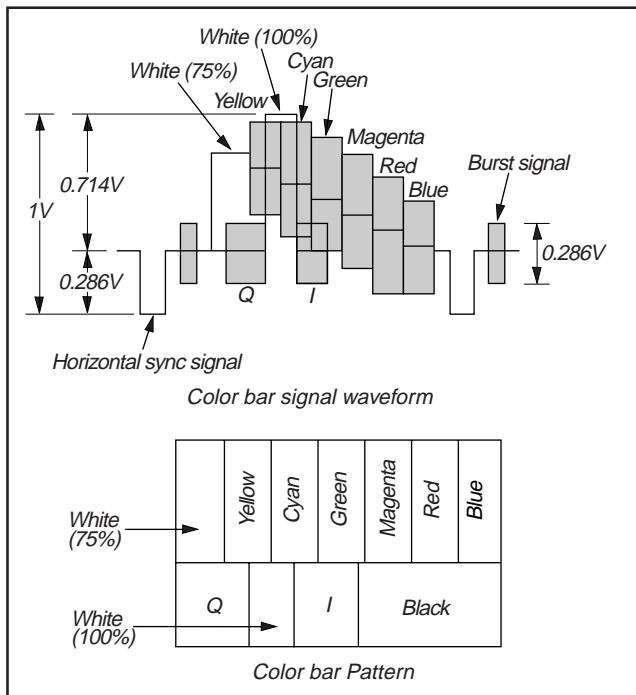


Fig. 5-3-3. Color Bar Signals of the Alignment Tape

3-1-6. Input/Output Level and Impedance

Video input/output

Phono jack, 1 Vp-p, 75Ω,
unbalanced, sync negative

S video input/output (CCD-TRV87/TRV87P only)

4-pin mini DIN

Luminance signal:

1Vp-p, 75Ω, unbalanced, sync negative

Chrominance signal:

0.286Vp-p 75Ω, unbalanced

Audio input/output

Phono jack,

Input: -7.5 dBs, input impedance more
than 47 kΩ

Output: -7.5 dBs, (at load impedance 47 kΩ), impedance
less than 2.2 kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching (CCD-TRV87/TRV87P)

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automatically according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of D, E, F, 7 Page Data

If the D, E, F, 7 page data is erased due to some reason, perform “1-2. INITIALIZATION OF D, E, F, 7 PAGE DATA”, of “5-1. CAMERA SECTION ADJUSTMENT”

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-234 board)

Improve the capstan servo characteristic. If it is not correct, jitters will increase.

Mode	Camera recording (SP mode)
Subject	Arbitrary
Measurement Point	Pin ⑫ of CN982 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	64
Specified value	Duty = 50 ± 1 %

Adjusting method:

- 1) Set to the Camera recording mode (SP mode).
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: 6, address: 01, set data: 81, and press the PAUSE button of the adjustment remote commander. (to start up automatic CAP FG offset adjustment.)
- 4) Select page: 6, address: 02, and check that the data is “01”.
- 5) Check that Duty of CAP FG signal satisfies the specified value. If not, select page: 6, address: 01, set data: 00, and press the PAUSE button, and then, repeat steps 1) to 5).
- 6) Select page: 6, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 7) Select page: 0, address: 01, and set data: 00.

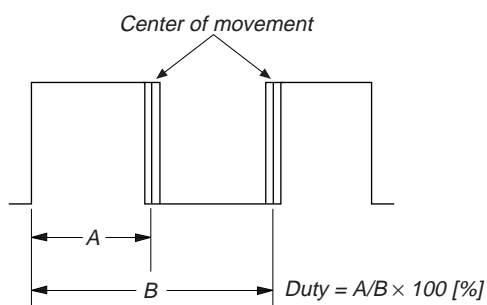


Fig. 5-3-4.

2. Switching Position Adjustment (VC-234 board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP)
Measurement Point	CH1: Pin ⑪ of CN982 (RF SWP) CH2: Pin ⑥ of CN982 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	62, 63
Specified Value	t1 = 0 ± 10 μsec

Adjusting Method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 22, set data: C0, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: F, address: 62, change the data and minimize “t1”, and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
- 4) Select page: F, address: 63, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: F, address: 22, set data: 80, and press the PAUSE button of the adjustment remote commander.
- 7) Select page: 0, address: 01, and set data: 00.

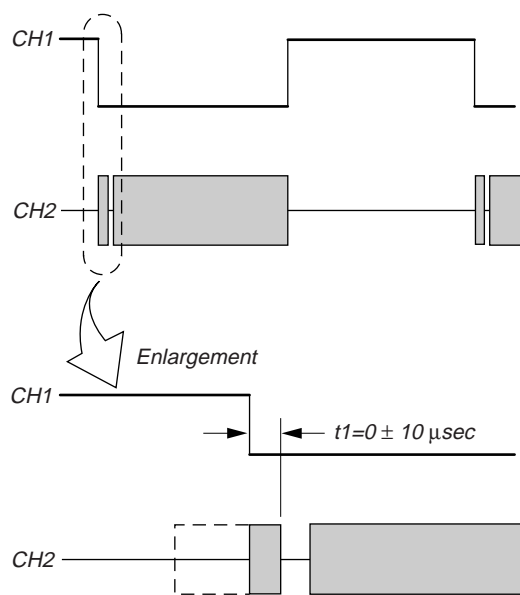


Fig. 5-3-5.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]

1. 28MHz origin oscillation adjustment
2. AFC f_0 adjustment
3. Filter f_0 adjustment
4. Y OUT level adjustment
5. C OUT level adjustment
6. REC Y current adjustment
7. REC C/AFM Current Adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-234 board)

Set the frequency of the clock for synchronization.

If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑧ of IC201 or pin ⑫ of IC501
Measuring Instrument	Frequency counter
Adjustment Pag	F
Adjustment Address	4D
Specified Value	$f=14318181 \pm 68\text{Hz}$

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 41, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 6, address: 61, and set data: 30.
- 4) Select page: F, address: 4D, change the data and set the clock frequency (f) to the specified value.
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: 6, address: 61, and set data: 10.
- 7) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 8) Select page: 0, address: 01, and set data: 00.

VC-234 BOARD

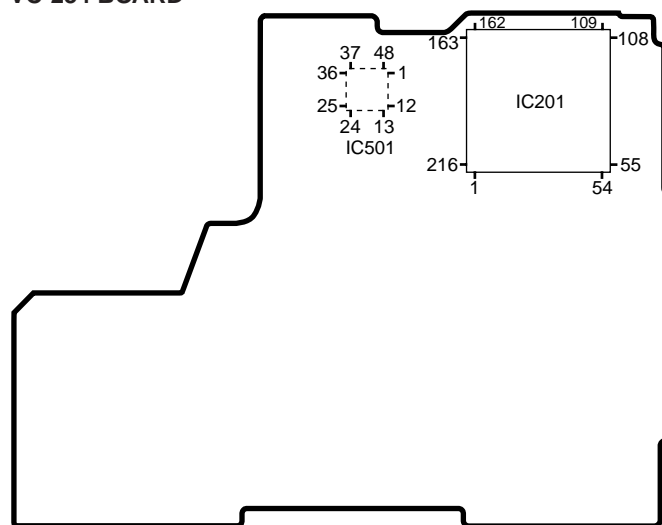


Fig. 5-3-6.

2. AFC f_0 Adjustment (VC-234 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	No signal
Measurement Point	Display data of page: 6, address: 02
Measuring Instrument	Adjustment remote commander
Adjustment Page	F
Adjustment Address	65
Specified Value	01

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 4D, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 6, address: 01, set data: C5, and press the PAUSE button.
(The AFC f_0 adjustment is performed and the adjustment data is stored in page: F, address: 65.)
- 4) Select page: 6, address: 02, and check that the data is "01".
- 5) Select page: 6, address: 01, set data: 00, and press the PAUSE button.
- 6) Select page: 2, address: 01, set data: 00, and press the PAUSE button.
- 7) Select page: 0, address: 01, and set data: 00.

3. Filter f_0 Adjustment (VC-234 board)

Adjust the f_0 frequency of the IC641 built-in filter.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN982 (IR VIDEO)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: ON)
Adjustment Page	F
Adjustment Address	66
Specified Value	Minimum residual chroma signal components

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 4F, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 2, address: 05, and set data: 40.
- 4) Select page: F, address: 66, change the data and minimize the residual chroma signal components (A).
(The data of address: 66 should be "70" to "7F".)
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 7) Select page: 2, address: 05, and set data: 00.
- 8) Select page: 0, address: 01, and set data: 00.

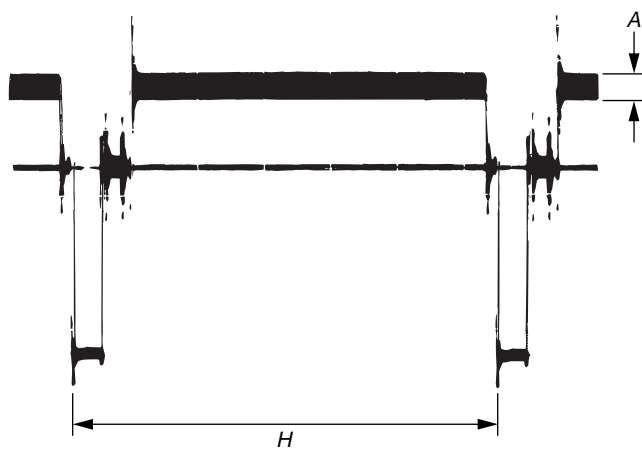


Fig. 5-3-7.

4. Y OUT Level Adjustment (VC-234 board)

Set the Y signal output level. (Adjust the D/A converter out put level of IC641.)

Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model: Y signal terminal of S VIDEO terminal (75Ω terminated) Standard8 model: VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	67
Specified Value	$A=286 \pm 5\text{mV}$

Note1: Hi8 model:

Insert the plug into the S VIDEO terminal.

Standard8 model:

Insert the plug into the VIDEO terminal.

Note2: Hi8 model:

CCD-TRV67/TRV87/TRV87P

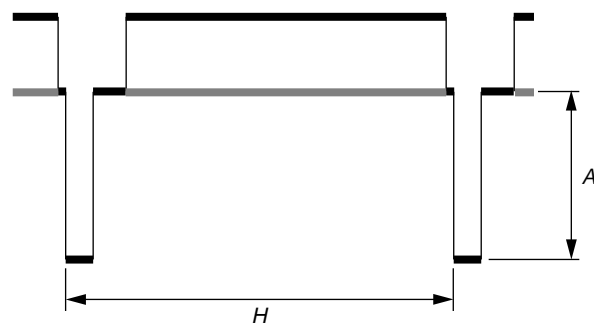
Standard8 model:

CCD-TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 41, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 6, address: 61, and set data: 30.
- 4) Select page: F, address: 67, change the data and set the SYNC level (A) to the specified value.
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: 6, address: 61, and set data: 10.
- 7) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 8) Select page: 0, address: 01, and set data: 00.

Hi8 model



Standard8 model

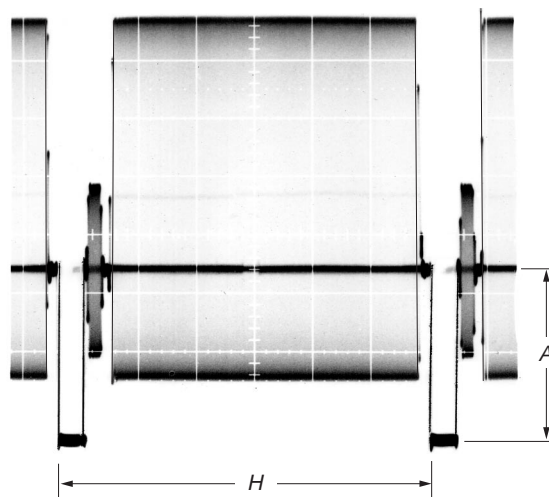


Fig. 5-3-8.

5. C OUT Level Adjustment (VC-234 board)

Set the chroma signal output level. (Adjust the D/A converter output level of IC641.)

Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model: Chroma signal terminal of S VIDEO terminal (75Ω terminated) Standard8 model: VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	68
Specified Value	$A=286 \pm 5\text{mV}$

Note1: Hi8 model:

Insert the plug into the S VIDEO terminal.

Standard8 model:

Insert the plug into the VIDEO terminal.

Note2: Hi8 model:

CCD-TRV67/TRV87/TRV87P

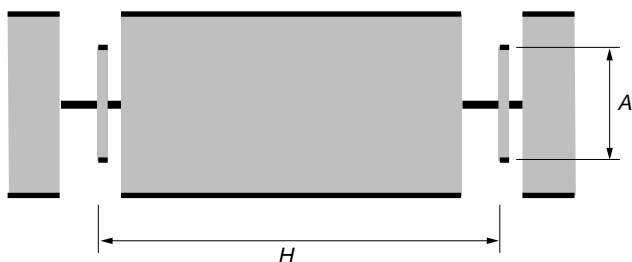
Standard8 model:

CCD-TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 41, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: 6, address: 61, and set data: 30.
- 4) Select page: F, address: 68, change the data and set the burst level (A) to the specified value.
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: 6, address: 61, and set data: 10.
- 7) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 8) Select page: 0, address: 01, and set data: 00.

Hi8 model



Standard8 model

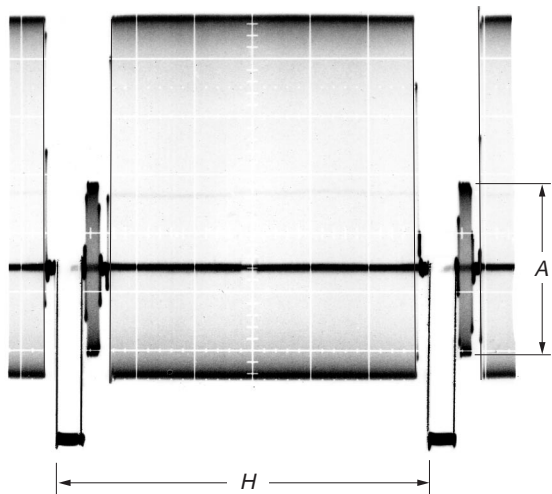


Fig. 5-3-9.

6. REC Y Current Adjustment (VC-234 board)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN982 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	6A, 6B
Specified Value	A=235 ± 5mV

Note: PLAYER model:

CCD-TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/
TRV67

Preparations only for the PLAYER model:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Only for the PLAYER model, select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "4-3, 3. Bit value discrimination" of "5-4. Service Mode").
- 3) Select page: D, address: 15, and memorize the data.
- 4) Only for the PLAYER model, select page: D, address: 15, and set the bit value of bit7 to "0".
- 5) Insert a tape, and set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑨ of IC803 of VC-234 board and GND with 4.7kΩ resistor for a second.)
4.7kΩ resistor: 1-249-425-11

Adjusting method:

- 1) Insert a tape, and set to recording mode.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: E, address: FB, set data: 06, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: F, address: 71, after note down the data, set data: 00, and press the PAUSE button.
- 5) Select page: 2, address: 01, set data: 41, and press the PAUSE button of the adjustment remote commander.
- 6) Select page: 6, address: 63, and set data: 01.
- 7) Select page: F, address: 6B, change the data and set the Y signal level (A) to the specified value.
- 8) Press the PAUSE button.
- 9) Select page: F, address: 6A, and set the same data as page: F, address: 6B, and press the PAUSE button.
- 10) Select page: F, address: 71, set the data noted down at step 4), and press the PAUSE button.
- 11) Select page: E, address: FB, set data: 04, and press the PAUSE button.
- 12) Select page: 6, address: 63, and set data: 00.
- 13) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 14) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment only for for the PLAYER model:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Only for the PLAYER model, select page: D, address: 14, and set the data memorized at step 2) of "Preparations only for the PLAYER model".
- 3) Press the PAUSE button.
- 4) Only for the PLAYER model, select page: D, address: 15, and set the data memorized at step 3) of "Preparations only for the PLAYER model".
- 5) Press the PAUSE button.
- 6) Select page: 0, address: 01, and set data: 00.

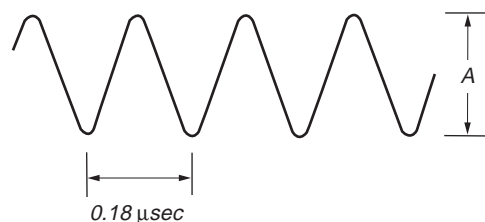


Fig. 5-3-10.

VC-234 BOARD

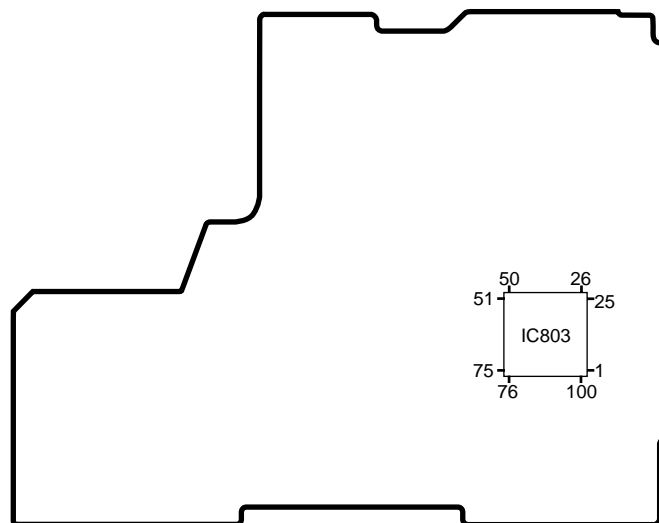


Fig. 5-3-11.

7. REC C/AFM Current Adjustment

Note: PLAYER model:

CCD-TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/
TRV67

7-1. Preparations only for the PLAYER model

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Only for the PLAYER model, select page: D, address: 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "4-3, 3. Bit value discrimination" of "5-4. Service Mode").
- 3) Select page: D, address: 15, and memorize the data.
- 4) Only for the PLAYER model, select page: D, address: 15, and set the bit value of bit7 to "0".
- 5) Insert a Hi8 ME tape, and set to VTR recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ③ of IC803 of VC-234 board and GND with 4.7k Ω resistor for a second.)
4.7k Ω resistor: 1-249-425-11

7-2. REC C Current Check (VC-234 board)

Check the recording current levels of the REC Chroma signal. If it is too low, chroma signal noise in played back picture will be increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN982 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Specified Value	A=50.8 \pm 3.0mV

Adjusting method:

- 1) Insert a Hi8 ME tape, and set to recording mode.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: 2, address: 01, set data: 41, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: 6, address: 61, and set data: 30.
- 5) Select page: E, address: FB, set data: 05, and press the PAUSE button.
- 6) Select page: F, address: 71, after note down the data, set data: 00, and press the PAUSE button.
- 7) Check that the REC chroma signal level (A) satisfies the specified value, and note down the signal level.
- 8) Select page: F, address: 71, set the data noted down at step 6), and press the PAUSE button.
- 9) Select page: E, address: FB, set data: 04, and press the PAUSE button.
- 10) Select page: 6, address: 61, and set data: 10.
- 11) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 12) Select page: 0, address: 01, and set data: 00.
- 13) Perform "REC AFM Current Adjustment" and "Processing after completed adjustment only for the PLAYER model".

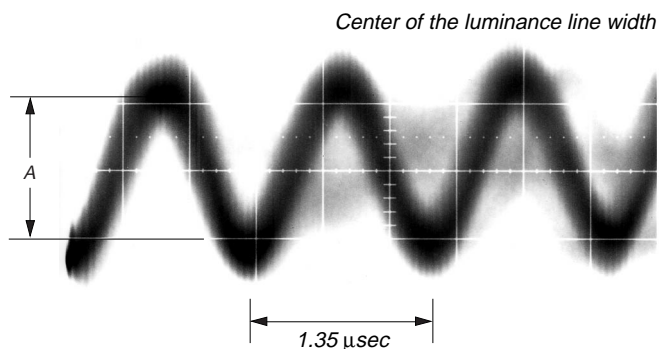


Fig. 5-3-12

7-3. REC AFM Current Adjustment (VC-234 board)

Set the recording levels of the REC AFM signal. If the level is too low, the audio S/N will be deteriorated. If too high, color beats will be produced on the self-recording / playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN982 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	71
Specified Value	$A = (\text{REC Chroma signal level}) \times 0.292 \pm 0.9\text{mV}$ (Note2)

Note1: Only for the STEREO model, do not insert any plug into the AUDIO (R) terminal.

Note2: REC Chroma signal level is noted down at step 7) of "REC C Current Check".

Adjusting method:

- 1) Insert a Hi8 ME tape, and set to recording mode.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: E, address: FB, set data: 07, and press the PAUSE button of the adjustment remote commander.
- 4) Select page: F, address: 71, change the data and set the REC AFM signal level (A) to the specified value.
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: E, address: FB, set data: 04, and press the PAUSE button.
- 7) Select page: 0, address: 01, and set data: 00.
- 8) Perform "Processing after completed adjustment only for the PLAYER model".

7-4. Processing after completed adjustment only for the PLAYER model

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Only for the PLAYER model, select page: D, address: 14, and set the data memorized at step 2) of "Preparations only for the PLAYER model".
- 3) Press the PAUSE button.
- 4) Only for the PLAYER model, select page: D, address: 15, and set the data memorized at step 3) of "Preparations only for the PLAYER model".
- 5) Press the PAUSE button.
- 6) Select page: 0, address: 01, and set data: 00.

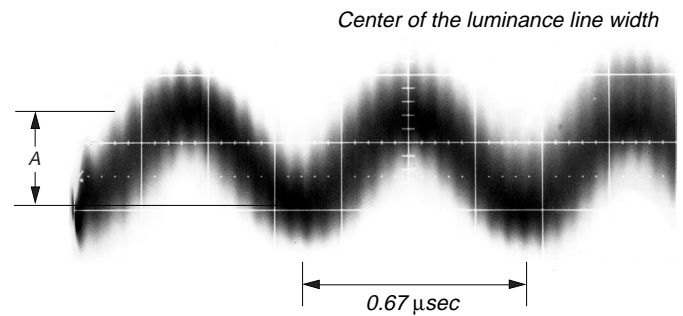


Fig. 5-3-13.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD-TRV87/TRV87P)

Adjust using a IR receiver jig (J-6082-383-A).

Note : If the distance between the IR receiver jig and the camcorder is below 1m, cover the LASER LINK emitter with a ND filter. (For example, when the distance is 30cm to 50cm, cover the LASER LINK emitter with a ND filter 1.0.)

Switch setting:

LASER LINK ON (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (VC-234 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	Pin ⑤ of CN003 of IR receiver jig (RF) (Or Pin ⑩ of IC751 of VC-234 board)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	80
Specified Value	$f = 11.85 \pm 0.05$ MHz

Connection of Equipment

Connect the measuring device as shown in the following figure, and adjust.

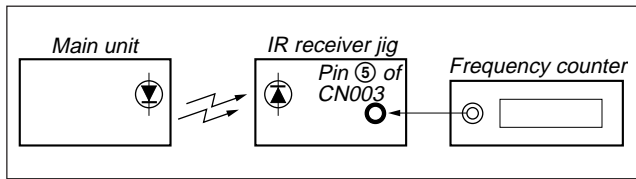


Fig. 5-3-14.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 37, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: F, address: 80, change the data, and set the video carrier frequency (f) to the specified value.
- 4) Press the PAUSE button of the adjustment remote commander.
- 5) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

2. IR Video Deviation Adjustment (VC-234 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7E
Specified Value	$A = 0.87 \pm 0.04$ V

Connection of Equipment

Connect the measuring device as shown in the following figure, and adjust.

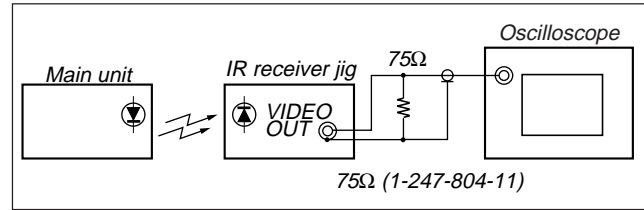


Fig. 5-3-15.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 39, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: F, address: 7E, and change the data, set the video signal amplitude (A) to the specified value.
- 4) Press the PAUSE button of the adjustment remote commander.
- 5) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjustment remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

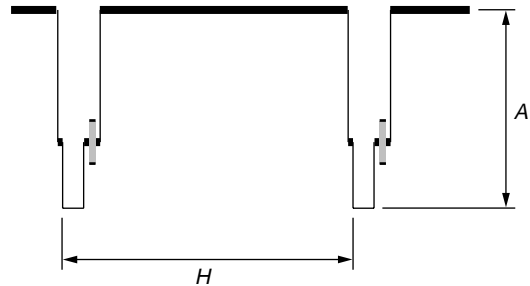


Fig. 5-3-16.

3. IR Audio Deviation Adjustment (VC-234 board)

Mode	VTR recording
Signal	Audio signal : 400Hz, -7.5dBs : L or R of AUDIO terminal Video signal : No signal : VIDEO terminal
Measurement Point	AUDIO L terminal and AUDIO R terminal of IR receiver jig (Terminated at 47kΩ)
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	7F
Specified Value	Signal level: -7.5 ± 2.0 dBs Level difference of L and R: Below 2dB

Connection of Equipment

Connect the measuring device as shown in the following figure, and adjust.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Connect the audio level meter to the AUDIO L terminal of the IR receiver jig.
- 3) Select page: F, address: 7F, change the data and set the 400Hz audio signal level to the specified value.
- 4) Press the PAUSE button of the adjustment remote commander.
- 5) Connect the audio level meter to the AUDIO R terminal of the IR receiver jig.
- 6) Check that the 400Hz audio signal level is within the specified value. If outside, repeat from step 2).
- 7) Select page: 0, address: 01, and set data: 00.

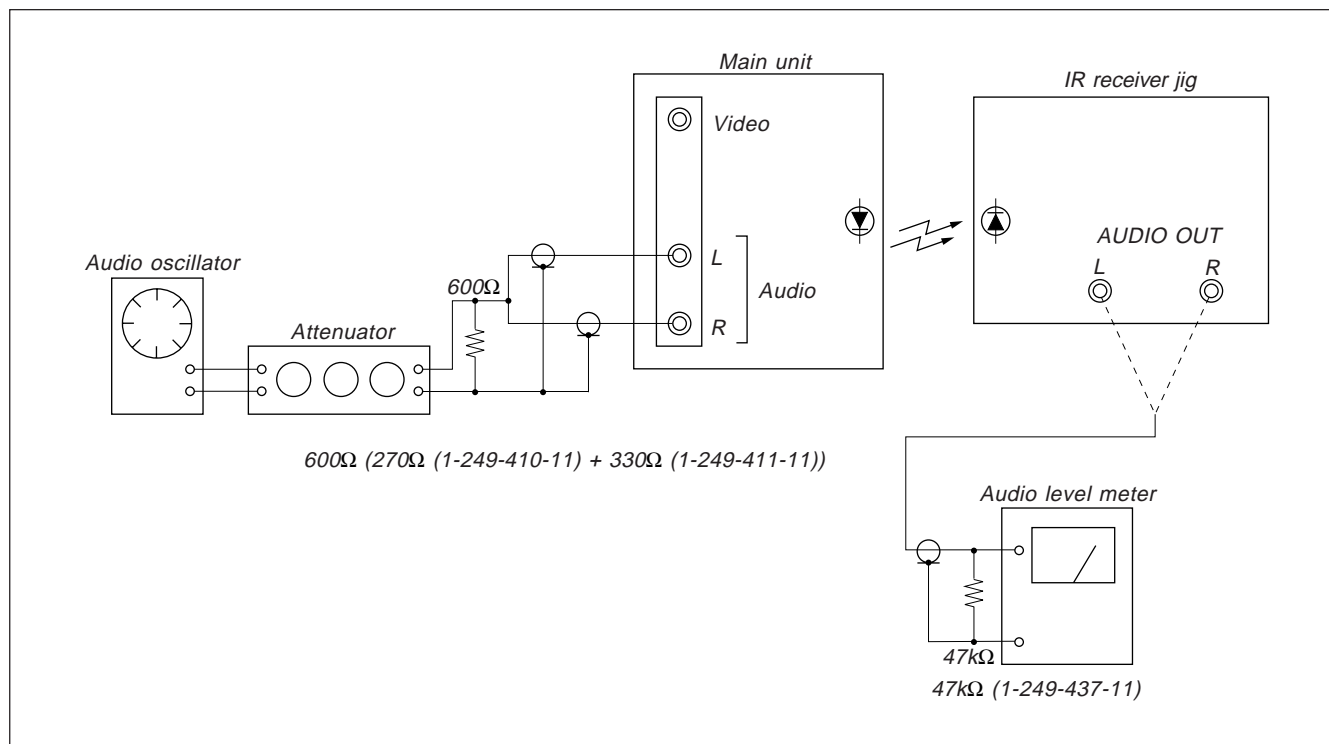


Fig. 5-3-17.

3-6. STEREO AUDIO SYSTEM ADJUSTMENT (CCD-TRV87/TRV87P)

- Perform the adjustment using color bar signal as a video signal input for the VIDEO terminal.
- The items to be adjusted for the R channel will be indicated within the [], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to “STEREO” position unless specified otherwise.

Note :

- 1) When inputting the audio signal, input same signal to both the L and R channels, unless otherwise.
- 2) Be sure insert the plug (Shorting plug or dummy plug, etc) into the AUDIO terminal (Right). If the plug is not inserted, the monaural mode will be set, and correct adjustments can not be carried out.

[Monaural mode]

During recording REC AFM RF 1.7MHz carrier will not be output.
 During playback The L + R signal will be output from the AUDIO terminal (Left).

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 5-3-18, and perform adjustments at the power switch [VTR] position.

[Adjustment Procedure]

- 1) 1.5MHz deviation adjustment
- 2) 1.7MHz deviation adjustment
- 3) BPF adjustment

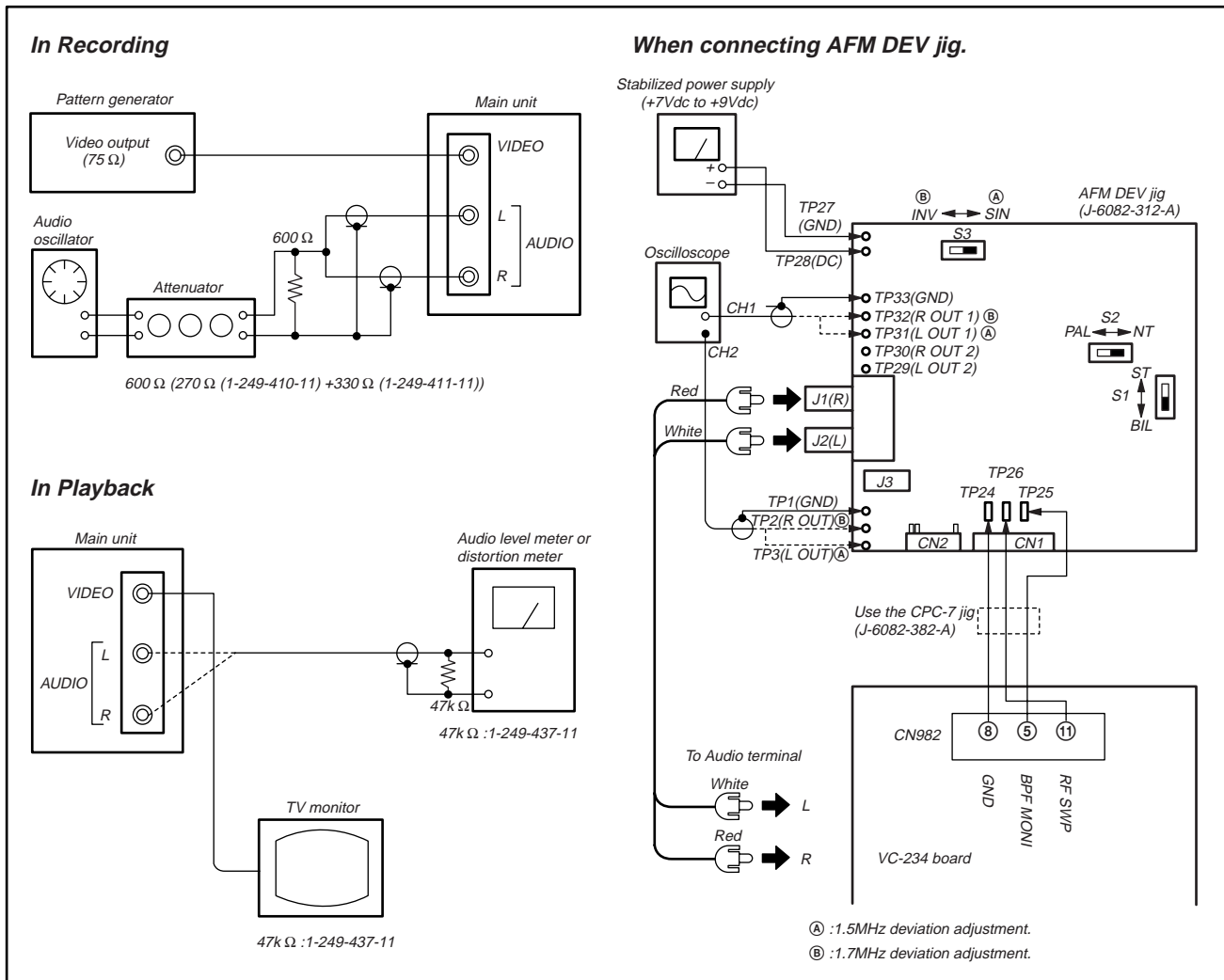


Fig. 5-3-18.

1. 1.5 MHz Deviation Adjustment (VC-234 board)

Sets the spectrum of the L-ch ((L+R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring Instrument	Oscilloscope ADD mode CH2 INV mode
Adjustment Page	F
Adjustment Address	7B
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

- 1) Connect TP24, TP25 and TP26 of the AFM DEV jig to CN982 of the VC-234 board.
 TP24(GND) Pin ⑧ of CN982
 TP25(REC RF) Pin ⑤ of CN982
 TP26(RF SWP) Pin ⑪ of CN982
- 2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
- 3) Connect TP28(DC), TP27(GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
- 4) Set the AFM DEV jig switches to the following positions.
 S1 BIL Position
 S2 NT Position
 S3 SIN Position

Adjusting method :

- 1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
- 2) Set the oscilloscope to the ADD mode and CH2 to the INV (invert) mode.
- 3) Select page: 0, address: 01, and set data: 01.
- 4) Select page: F, address: 7B, change the data and minimize the audio signal level difference (A).
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

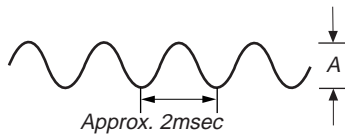


Fig. 5-3-19.

2. 1.7 MHz Deviation Adjustment (VC-234 board)

Sets the spectrum of the R-ch ((L-R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring Instrument	Oscilloscope ADD mode CH2 normal mode
Adjustment Page	F
Adjustment Address	7C
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

- 1) Connect TP24, TP25 and TP26 of the AFM DEV jig to CN982 of the VC-234 board.
 TP24(GND) Pin ⑧ of CN982
 TP25(REC RF) Pin ⑤ of CN982
 TP26(RF SWP) Pin ⑪ of CN982
- 2) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
- 3) Connect TP28(DC), TP27(GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
- 4) Set the AFM DEV jig switches to the following positions.
 S1 BIL Position
 S2 NT Position
 S3 INV Position

Adjusting method :

- 1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
- 2) Set the oscilloscope to the ADD mode and CH2 to the normal mode.
- 3) Select page: 0, address: 01, and set data: 01.
- 4) Select page: F, address: 7C, change the data and minimize the audio signal level difference (A).
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

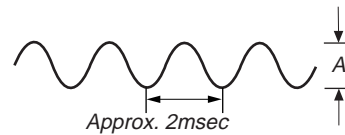


Fig. 5-3-20.

3. BPF f0 Adjustment (VC-234 board)

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated, the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11NS)
Measurement Point	Audio output terminal left or right
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	7D
Specified Value	The Main and Sub channel distortion rate should be almost the same (within $\pm 1\%$) and minimum.

Adjusting method :

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Set the Hi-Fi sound switch (menu display) to "2".
- 3) Select page: F, address: 7D, change the data and minimize the distortion rate.
- 4) Press the PAUSE button of the adjustment remote commander.
- 5) Set the Hi-Fi sound switch (menu display) to "1".
- 6) Select page: F, address: 7D, change the data and minimize the distortion rate.
- 7) Press the PAUSE button of the adjustment remote commander.
- 8) Repeat steps 2) to 7) and set the data of address: 64 so that the distortions rates when the Hi-Fi sound switch is set to "2" and set to "1" respectively are almost the same and minimum.
- 9) Press the PAUSE button of the adjustment remote commander.
- 10) Select page: 0, address: 01, and set data: 00.
- 11) Set the Hi-Fi sound switch to "STEREO".

3-7. MONAURAL AUDIO SYSTEM ADJUSTMENT (CCD-TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments besides the video system measuring instruments as shown Fig. 5-3-21.

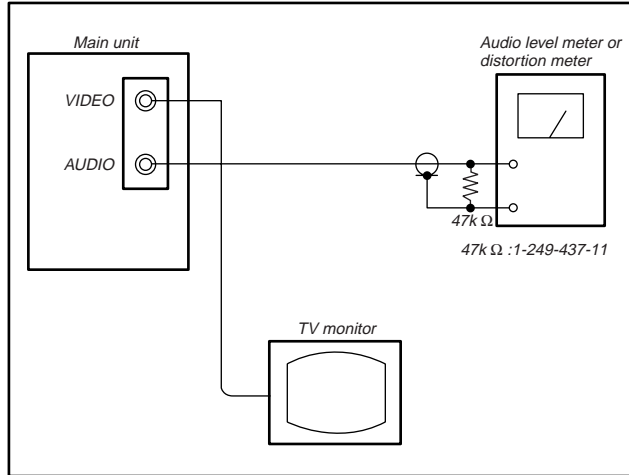


Fig. 5-3-21.

1. 1.5 MHz Deviation Adjustment (VC-234 board)

Adjust to the optimum audio FM signal deviation.

If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5NSP)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	7B
Specified Value	$-7.5 \pm 0.5\text{dB}$

Adjusting method :

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 7B, change the data and set the 400Hz signal level to the specified value.
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

2. BPF Adjustment (VC-234 board)

Adjust to the optimum audio BPF characteristics of the IC.

If the adjustment is not correct, the distortion rate and S/N ratio will worsen.

Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11NS)
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Adjustment Page	F
Adjustment Address	7D
Specified Value	The distortion rate should be and minimum.

Adjusting method :

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 7D, change the data and minimize the distortion rate.
- 3) Press the PAUSE button of the adjustment remote commander.
- 4) Select page: 0, address: 01, and set data: 00.

5-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER

The adjustment remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander

- 1) Connect the adjustment remote commander to the LANC terminal.
- 2) Set the HOLD switch of the adjustment remote commander to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander will display as shown in Fig. 5-4-1.

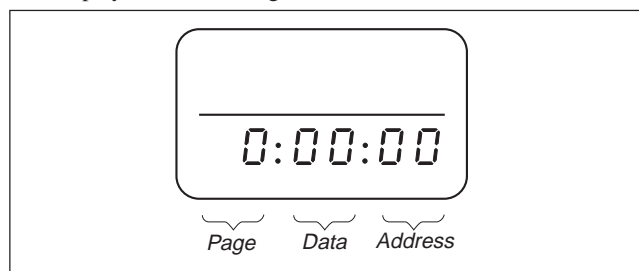


Fig. 5-4-1.

- 3) Operate the adjustment remote commander as follows.
 - Changing the page
The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH- button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

- Changing the address
The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
 - Changing the data (Data setting)
The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
 - Writing the adjustment data
The PAUSE button must be pressed to write the adjustment data (D, E, F, 7 page) in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed.)
- 4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table																②
Lower digit of hexadecimal Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: The characters shown in the parenthesis () shown the display on the adjustment remote commander.
(Example) If the DDS display or the adjustment remote commander shows BD (bd);
 Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point “189” of ① and ② in the above table is the corresponding decimal number.

Table. 5-4-1.

4-3. SERVICE MODE

Note: After the completion of the all adjustments, cancel the service mode by either of the following ways.

- 1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
- 2) After data on page: D and F is restored, return data of the address: 01 on page: 0 to 00. And when data on page: 2 is changed, return the data to the original condition.

1. Test Mode Setting

Set/release each test mode. Set page: 0, address: 01, data: 01 before setting the data of page D and F.

Page F	Address 22
--------	------------

Data	Function
80	Normal
81	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10
--------	------------

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera + VTR power ON

- * For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjustment remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off.
- * Be sure to return the data of page: F, address: 22 to 80, and the data of page: D, address: 10 to 00 after completing adjustments/repairs and press the PAUSE button of the adjustment remote commander. And set page: 0, address: 01, data: 00.

2. Emergency Memory Address

Page F	Address 10 to 1B
--------	------------------

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency. The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency. Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.

Note 2: When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

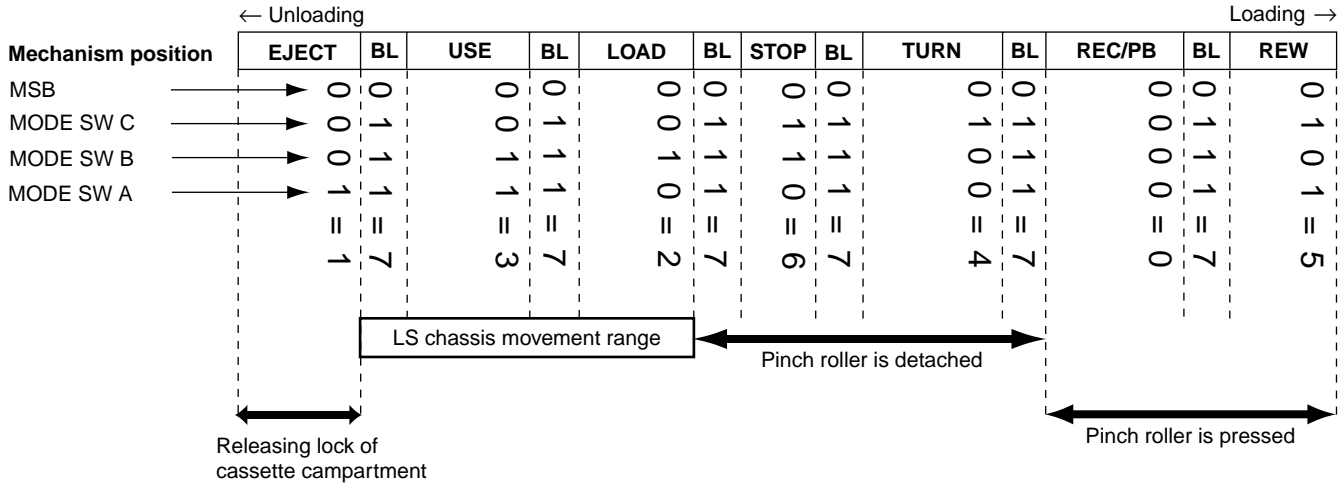
2-1. EMG code (Emergency code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW codes

- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.

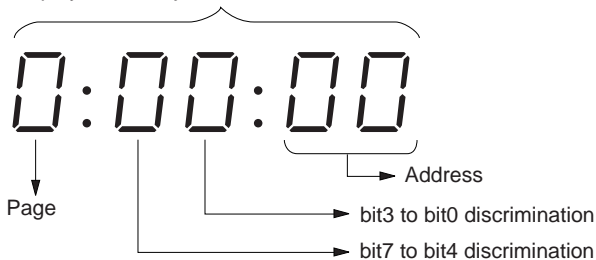


Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".

Display on the adjustment remote commander



(Example) If the remote commander display is "8E", bit value from bit 7 to bit 4 can be discriminated from the column ①, and those from bit 3 to bit 0 from column ②.

Display on the adjustment remote commander	Bit values			
	bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
① 8	1	0	0	0
9	1	0	0	1
A (F)	1	0	1	0
B (b)	1	0	1	1
C (L)	1	1	0	0
D (d)	1	1	0	1
② E (E)	1	1	1	0
F (F)	1	1	1	1

4. Input/output selection check

Page 2	Address 49
--------	------------

Bit	Function	When bit value = 1	When bit value = 0
0			
1			
2			
3			
4	MIC jack (Note 1)	MIC jack is used	
5	AUDIO terminal (Note 1)	Monaural	Stereo
6	VIDEO terminal	VIDEO terminal is used	
7	S VIDEO terminal (Note 2)		S VIDEO terminal is used

Note 1: STEREO model only.

Note 2: Hi8 model only.

Using method:

- 1) Select page: 2, address: 49.
- 2) By discriminating the bit value of display data, the state of the input/output selection can be discriminated.

5. LED, LCD (display window) check

Page 2	Address 05	Bit5
--------	------------	------

Using method:

- 1) Select page: 2, address: 05, and set the bit value of Bit5 to "1".
- 2) Check that all LED are lit and all segments of LCD (display window) are lit.
- 3) Select page: 2, address: 05, and set the bit value of Bit5 to "0".

6. Record of Use check

Page 2	Address A2 to AA
--------	------------------

Bit	Function	Remarks
A2	Drum rotation	Hour (H) 1000th place digit and 100th place digit of counted time (decimal digit)
A3	counted time (BCD code)	Hour (L) 10th place digit and 1st place digit of counted time (decimal digit)
A4		Minute
A5	User initial power	Year
A6	on date	Month
A7	(BCD code)	Day
A8	Final condensation	Year
A9	occurrence date	Month
AA	(BCD code)	Day

Using method:

- 1) The record of use data is displayed at page: 2, addresses: A2 to AA.

Note: This data will be erased when the coin lithium battery (CF-66/67 board BH001) is removed (reset).

7. Switch check (1)

Page 2	Address 43
--------	------------

Bit	Function	When bit value = 1	When bit value = 0
0	VTR MODE SW (MA-374/375 board S302)	OFF	ON
1	CAM MODE SW (MA-374/375 board S303)	OFF	ON
2	START/STOP SW (SS-8500 block S002)	OFF	ON
3	EJECT SW (SS-8500 block S003)	OFF	ON
4	CC DOWN SW (Mechanism chassis)	OFF (UP)	ON (DOWN)
5	PHOTO FREEZE SW (FP-49 flexible)(Note)	OFF	ON
6			
7			

Note: CCD-TRV87/TRV87P model only.

Using method:

- 1) Select page: 2, address: 43.
- 2) By discriminating the bit value of display data, the state of the switches can be discriminated.

8. Switch check (2)

Page 2	Address 60 to 66
--------	------------------

Using method:

- 1) Select page: 2, address: 60 to 66.
- 2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0B	0C to 23	24 to 3E	3F to 5C	5D to 80	81 to A9	AA to D6	D7 to FF
60 (KEY AD0) (IC803 ㉓)	LASER LINK (FK-8500 block) (S008) Note2	STOP (FK-8500 block) (S001)	FF (FK-8500 block) (S003)	REC (FK-8500 block) (S005, 007) Note2	EDIT SEARCH(+) (FK-8500 block) (S009)	EDIT SEARCH(-) (FK-8500 block) (S010)		No key input
61 (KEY AD1) (IC803 ㉔)	PHOTO REC (FP-49 flexible) Note2	PAUSE (FK-8500 block) (S002)	REW (FK-8500 block) (S004)	PLAY (FK-8500 block) (S006)				No key input
62 (KEY AD2) (IC803 ㉕)	DIGITAL EFFECT (CF-66/67 board) (S001) Note2	PICTURE EFFECT (CF-66/67 board) (S016/004)	MENU (CF-66/67 board) (S006)	EXECUTE (CF-66/67 board) (S008/009)	TIME (CF-66/67 board) (S011/012)			No key input
64 (KEY AD4) (IC803 ㉗)			EXPOSURE (CF-66/67 board) (S007)	BACK LIGHT (CF-66/67 board) (S009/010)	FADER (CF-66/67 board) (S012/013)	FOCUS INFINITY (MR-8500 block) (S001)	FOCUS AUTO (MR-8500 block) (S001)	FOCUS MANUAL (MR-8500 block) (S001)
65 (KEY AD5) (IC803 ㉘)	DATE (CF-66/67 board) (S002)	COUNTER RESET (CF-66/67 board) (S005)	END SEARCH (CF-67 board) (S008) Note3	TITLE (CF-66/67 board) (S010/011)	DISPLAY (CF-67 board) (S014) Note3	SUPER NIGHT SHOT (FP-62 flexible) Note2	PANEL CLOSE	PANEL OPEN
66 (KEY AD6) (IC803 ㉙)	PROGRAM AE (CF-66/67 board) (S003 (Note4)) (S014 (Note5))	BRIGHT(+) (PD-117 board) (S5701)	BRIGHT(-) (PD-117 board) (S5702)	VOLUME(+) (PD-117 board) (S5703)	VOLUME(-) (PD-117 board) (S5704)	PANEL REVERSE (FP-152 flexible)		PANEL NORMAL (FP-152 flexible)

Note1: TR model / TRV model

TR model: CCD-TR317/TR517

TRV model: CCD-TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P

Note2: CCD-TRV87/TRV87P model only

Note3: TRV model only

Note4: Except CCD-TR317/TR517 model

Note5: CCD-TR317/TR517 model only

9. Headphone jack check (TRV model only)

Page 2	Address 45
--------	------------

Bit	Function	When bit value = 1	When bit value = 0
1	Headphone jack	Headphone jack is used	

Using method:

- 1) Select page: 2, address: 45.
- 2) By discriminating the bit value of display data, the state of the headphone jack can be discriminated.

SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

NOTE:

- XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

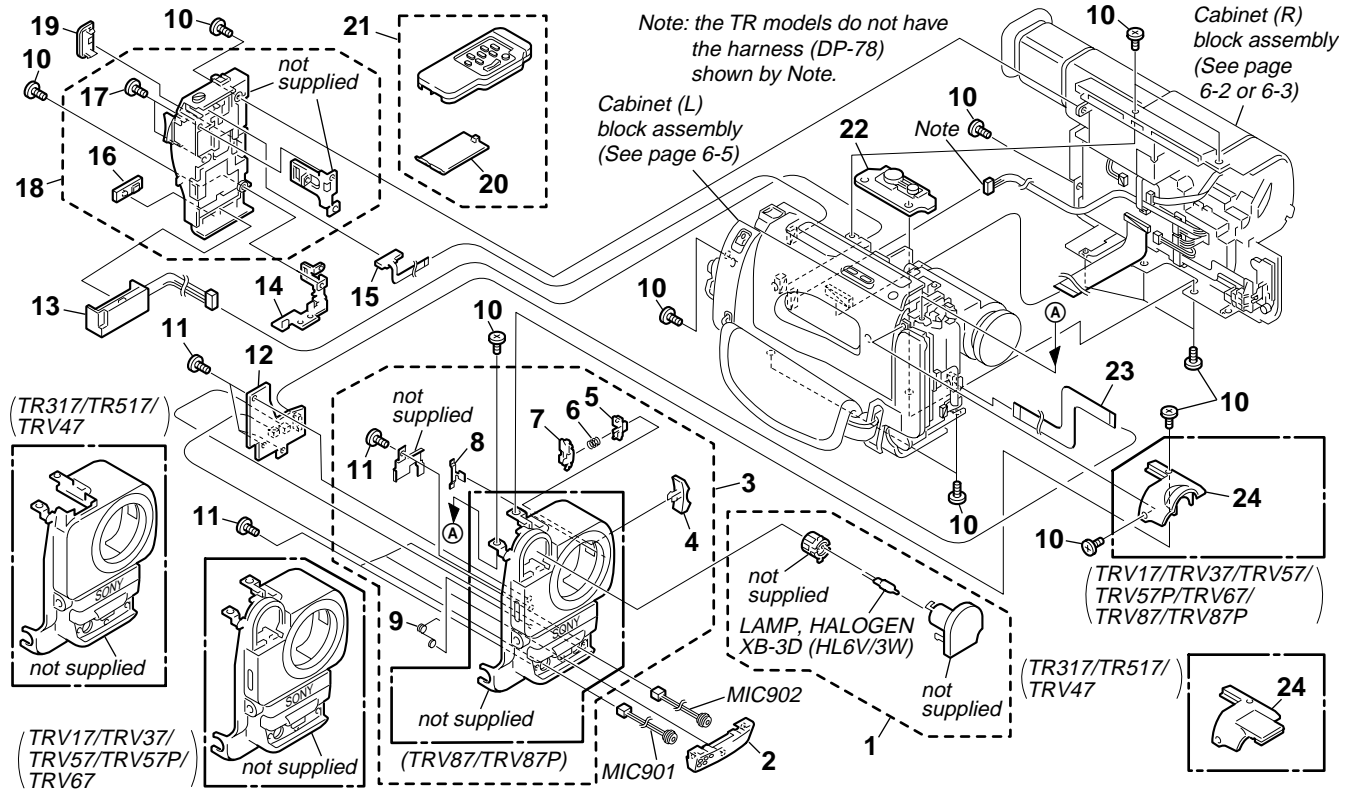
- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviation

CND: Canadian model
KR: Korea model
HK: Hong Kong model
JE: Tourist model
BR: Brazilian model
AR: Argentina model

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

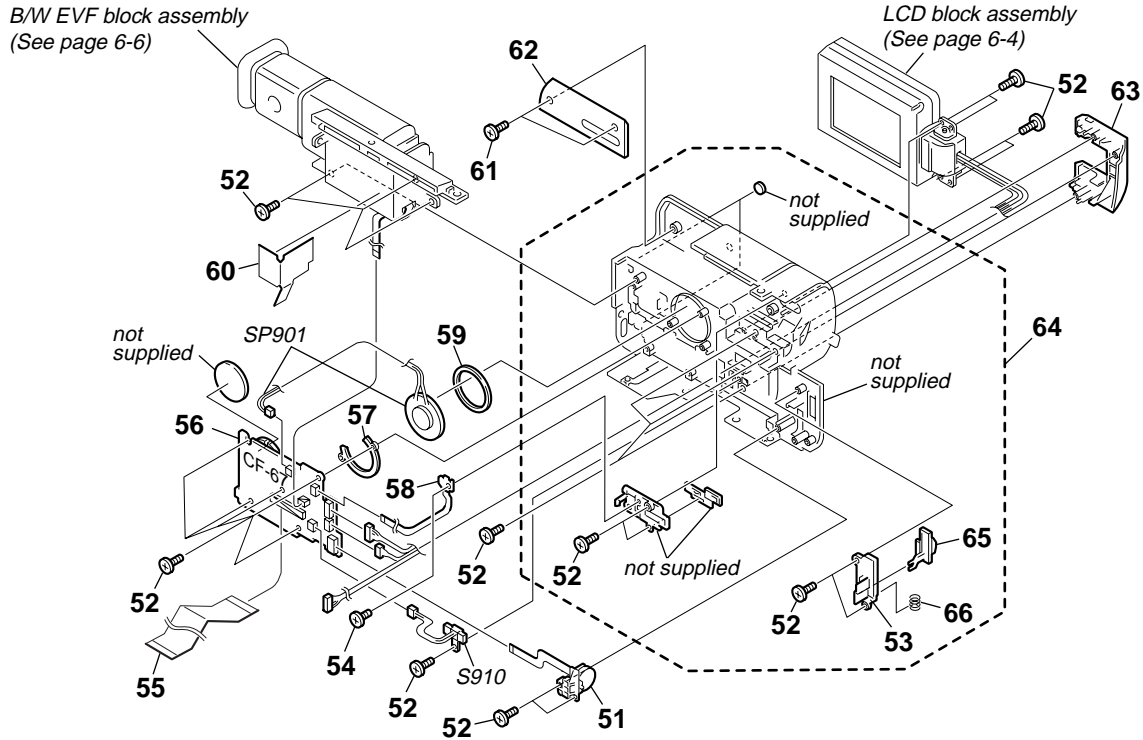
Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. FRONT PANEL BLOCK ASSEMBLY AND BATTERY PANEL BLOCK ASSEMBLY



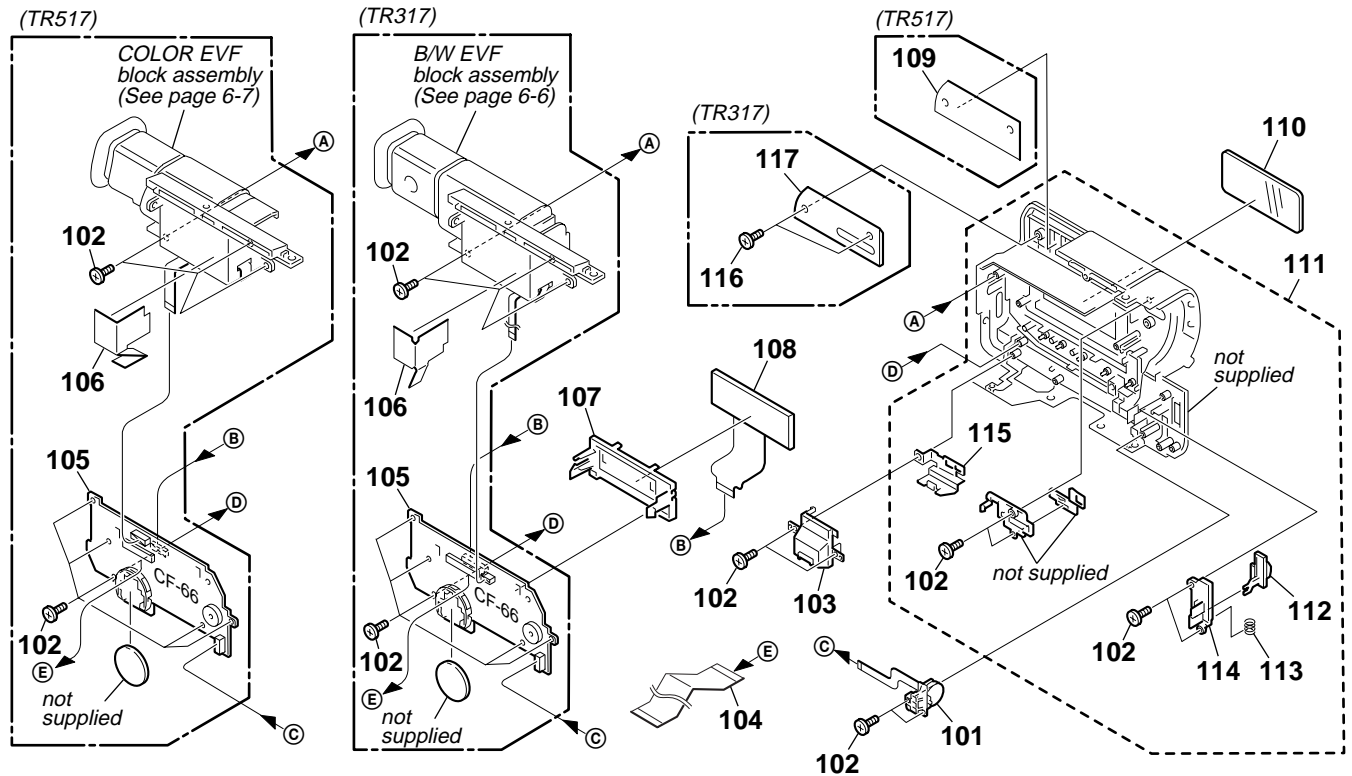
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	1-517-857-11	LIGHT, VIDEO (TRV17/TRV37/TRV57P/TRV67/TRV87/TRV87P)		13	1-694-384-11	TERMINAL BOARD, BATTERY	
2	X-3949-326-1	GRILLE (D) ASSY, MICROPHONE		14	3-053-723-01	SHEET METAL (LOWER), STRAP	
3	X-3950-120-1	PANEL(97) ASSY, FRONT (TRV87/TRV87P)		15	1-672-663-21	FP-49 FLEXIBLE BOARD(TRV87/TRV87P)	
3	X-3950-121-1	PANEL(97) ASSY, FRONT (TRV57/TRV57P/TRV67)		16	3-987-656-01	LID,JACK	
3	X-3950-122-1	PANEL(97) ASSY, FRONT (TR317/TR517)		17	3-968-729-61	SCREW (M2X3), LOCK ACE, P2	
3	X-3950-123-1	PANEL(97) ASSY, FRONT (TRV47)		18	X-3950-109-1	PANEL (97) ASSY, BATTERY (TRV87/TRV87P)	
3	X-3950-337-1	PANEL(97) ASSY, FRONT (TRV17/TRV37)		18	X-3950-110-1	PANEL (97) ASSY, BATTERY (TR317:E,HK,KR/TR517:US,CND,E,AR/TRV17/TRV37:US,CND,E,AR/ TRV47/TRV57/TRV57P/TRV67:US,E,HK,KR,AR,JE)	
4	3-987-631-01	KNOB,P		18	X-3950-493-1	PANEL (97) ASSY, BATTERY (TR317:BR/TR517:BR/TRV37:BR/TRV67:BR)	
5	3-053-597-01	BUTTON (D), LOCK		19	3-975-752-01	LID(BT), CPC	
6	3-973-619-01	SPRING, COMPRESSION		20	3-958-131-01	LID,BATTERY CASE (for RMT-708) (TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
7	3-053-596-01	HOLDER (D), P KNOB		21	1-467-574-21	REMOTE COMMANDER (RMT-708) (TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
8	3-987-642-01	SPRING, CLICK		22	3-987-717-01	SCREW	
9	3-987-882-01	SPRING, TORSION		23	1-672-670-11	FP-43 FLEXIBLE BOARD	
10	3-968-729-91	SCREW (M2), LOCK ACE, P2		24	3-053-603-01	CABINET (L), SHOE (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
11	3-948-339-61	TAPPING		24	3-058-251-01	CABINET (N) (97), SHOE (TR317/TR517/TRV47)	
12	A-7074-121-A	MA-375 (N-VHMMBO) BOARD,COMPLETE (TRV57/TRV57P/TRV67)		MIC901	1-542-312-11	MICROPHONE (R)	
12	A-7074-127-A	MA-375 (N-VHXRIBO) BOARD,COMPLETE (TRV87/TRV87P)		MIC902	1-542-312-11	MICROPHONE (L) (TRV87/TRV87P)	
12	A-7074-153-A	MA-374 (LO) BOARD,COMPLETE (TR317/TR517)					
12	A-7074-191-A	MA-375 (VO) BOARD,COMPLETE (TRV47)					
12	A-7074-228-A	MA-375 (N-VBLO) BOARD,COMPLETE (TRV17/TRV37)					

6-1-2. CABINET (R) BLOCK ASSEMBLY (TRV MODEL)
(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)



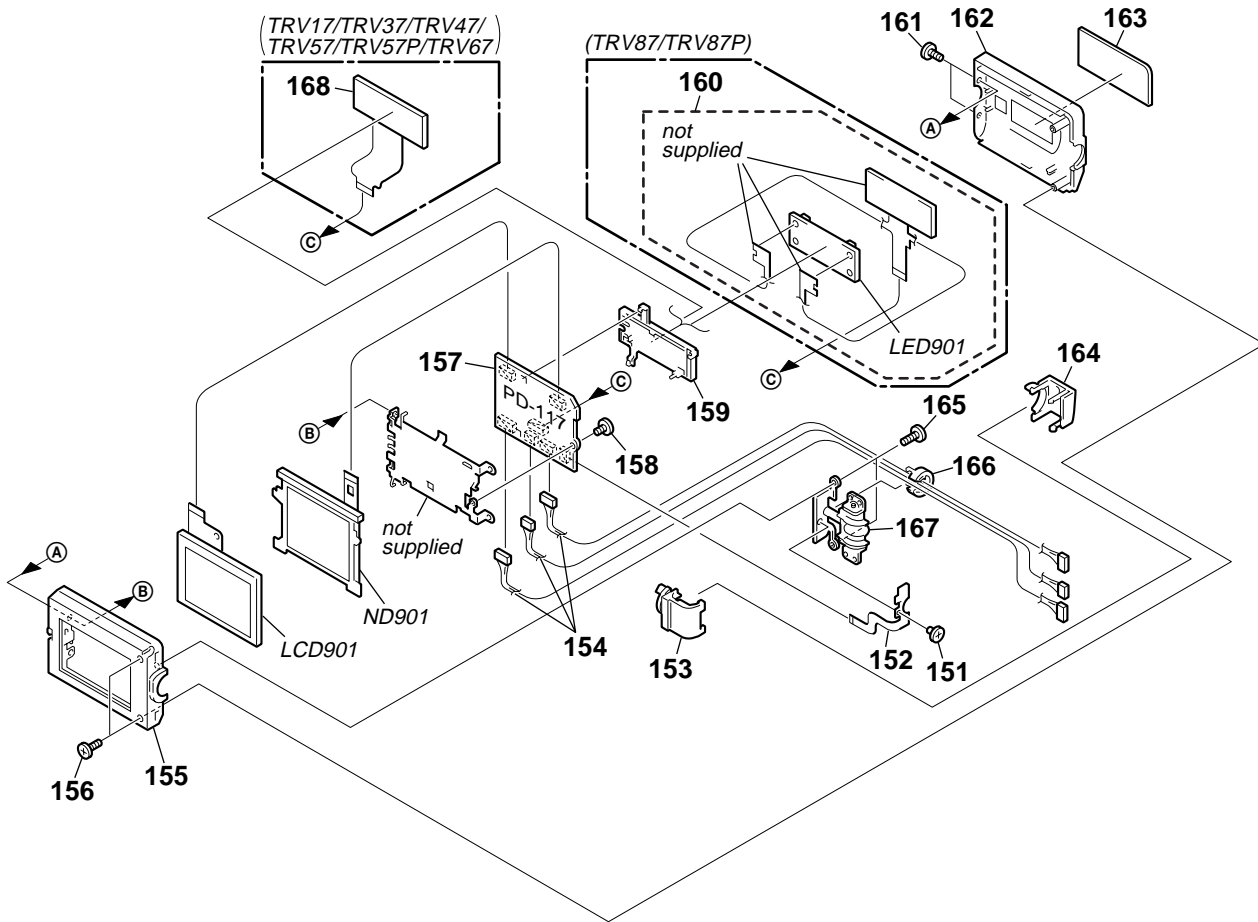
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	1-475-621-11	SWITCH BLOCK, CONTROL(MR-8500)		61	3-948-339-81	TAPPING	
52	3-948-339-61	TAPPING		62	3-053-684-01	GUIDE (B) (93), TILT	
53	3-053-690-01	RETAINER (93), MF		63	3-053-706-31	COVER (R) (93), HINGE (TRV87/TRV87P)	
54	3-713-791-01	SCREW (M1.7X4), TAPPING, P2	(TRV87/TRV87P)	63	3-053-706-41	COVER (R) (93), HINGE	(TRV57/TRV57P/TRV67)
55	1-791-948-11	CABLE, FLEXIBLE FLAT (FFC-001)		63	3-053-706-51	COVER (R) (93), HINGE (TRV17/TRV37/TRV47)	
56	A-7074-120-A	CF-67 (N-VHMMBO) BOARD,COMPLETE	(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	64	X-3950-096-1	CABINET (R) (98) ASSY (TRV87/TRV87P)	
56	A-7074-126-A	CF-67 (N-VHXRIBO) BOARD,COMPLETE	(TRV87/TRV87P)	64	X-3950-097-1	CABINET (R) (98) ASSY	(TRV57/TRV57P/TRV67)
* 57	3-053-783-01	RETAINER (93), SPEAKER		64	X-3950-098-1	CABINET (R) (98) ASSY (TRV17/TRV37/TRV47)	
58	1-672-668-21	FP-62 FLEXIBLE BOARD (TRV87/TRV87P)		65	3-053-689-21	KNOB(93), MF	
59	3-060-141-01	SPACER (97), SP		66	3-568-315-01	SPRING, COMPRESSION	
* 60	3-059-290-01	GUIDE (97), HARNESS		S910	1-771-848-11	SWITCH, PUSH	
				SP901	1-504-753-41	SPEAKER (2.8CM)	

6-1-3. CABINET (R) BLOCK ASSEMBLY (TR MODEL) (TR317/TR517)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	1-475-621-11	SWITCH BLOCK, CONTROL(MR-8500)		* 109	3-058-246-01	BLIND (97), CVF (TR517)	
102	3-948-339-61	TAPPING		110	3-058-219-01	WINDOW (97), LCD (TR517)	
103	3-053-717-11	RETAINER, LITHIUM BATTERY		110	3-058-219-11	WINDOW (97), LCD (TR317)	
104	1-791-948-11	CABLE, FLEXIBLE FLAT (FFC-001)		111	X-3950-088-1	CABINET (R) (97) ASSY	
105	A-7074-152-A	CF-66 (N-LO) BOARD,COMPLETE (TR317)		112	3-056-469-01	KNOB (93), MF	
105	A-7074-156-A	CF-66 (N-CO) BOARD,COMPLETE (TR517)		113	3-568-315-01	SPRING, COMPRESSION	
* 106	3-059-290-01	GUIDE (97),HARNESS (TR317)		114	3-053-690-01	RETAINER (93), MF	
* 106	3-059-310-01	GUIDE (C) (97), HARNESS (TR517)		115	3-053-713-01	LID(92), LITHIUM BATTERY	
107	3-058-238-01	HOLDER (97), LCD		116	3-948-339-81	TAPPING (TR317)	
108	1-803-844-81	DISPLAY PANEL, LIQUID CRYSTAL		117	3-053-684-01	GUIDE (B) (93), TILT (TR317)	

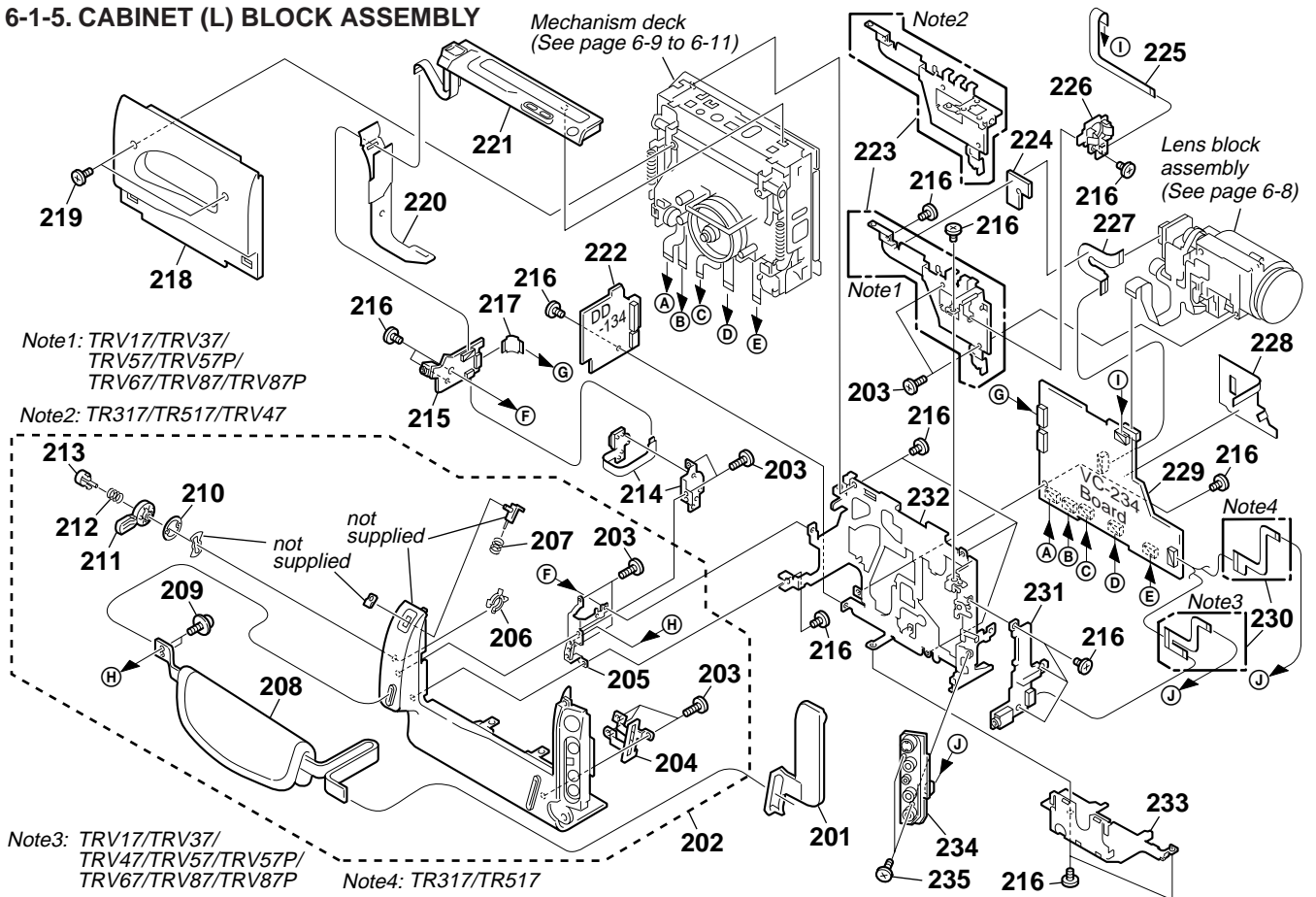
6-1-4. LCD BLOCK ASSEMBLY (TRV MODEL)
(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	4-981-286-01	SCREW (M1.7X2) (IB LOCK)		163	3-058-220-11	WINDOW (98), LCD (TRV67)	
152	1-676-300-11	FP-152 FLEXIBLE BOARD		163	3-058-220-21	WINDOW (98), LCD (TRV37)	
153	3-058-244-01	COVER (M) (98), HINGE		163	3-058-220-31	WINDOW (98), LCD (TRV57/TRV57P)	
154	1-960-161-11	HARNESS (DP-78)		163	3-058-220-41	WINDOW (98), LCD (TRV47)	
155	X-3949-335-1	CABINET (M) (93) ASSY, P		163	3-059-033-11	WINDOW (98), LCD (TRV17)	
156	3-948-339-81	TAPPING		164	3-053-707-01	COVER (C) (93), HINGE (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
157	A-7074-229-A	PD-117 (N-SH) BOARD, COMPLETE		164	3-053-707-21	COVER (C) (93), HINGE (TRV87/TRV87P)	
158	3-713-786-21	SCREW (M2X3)		165	3-948-339-31	SCREW, TAPPING	
159	3-053-702-01	HOLDER (93), LCD (TRV87/TRV87P)		166	3-987-623-01	CLAMP, HARNESS	
159	3-058-243-01	HOLDER (98), LCD (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		167	X-3950-108-1	HINGE (98) ASSY	
160	A-7094-150-A	INDICATION LCD BLOCK ASSY (TRV87/TRV87P)		168	1-803-844-81	DISPLAY PANEL, LIQUID CRYSTAL (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
161	3-968-729-91	SCREW (M2), LOCK ACE, P2		LCD901	1-803-852-31	INDICATOR MODULE, LIQUID CRYSTAL	
162	3-058-210-01	CABINET (C) (98), P (TRV87/TRV87P)		△ LED901	1-517-858-11	LIGHT, BACK (TRV87/TRV87P)	
162	3-058-210-11	CABINET (C) (98), P (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		△ ND901	1-517-752-31	TUBE, FLUORESCENT, COLD CATHODE	
163	3-058-220-01	WINDOW (98), LCD (TRV87/TRV87P)					

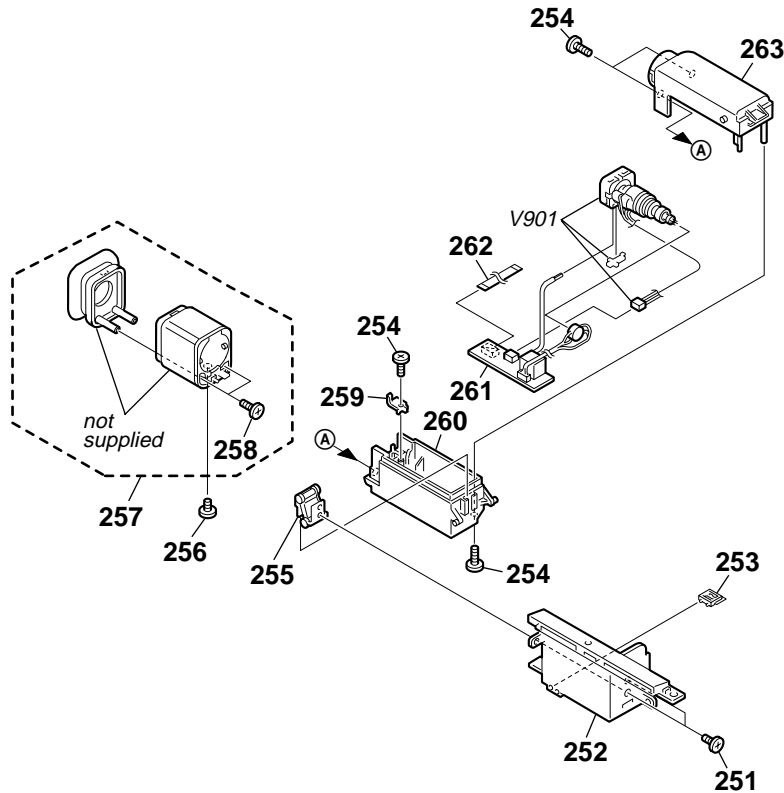
<p>Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.</p>	<p>Note : Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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6-1-5. CABINET (L) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 201	3-975-522-11	COVER, JACK		* 223	3-053-742-01	FRAME (L), LENS	
202	X-3950-112-1	CABINET (L) ASSY (TRV87/TRV87P)				(TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
202	X-3950-113-1	CABINET (L) ASSY (TRV67)		* 224	3-058-969-02	CUSHION (97), CD FLEXIBLE	
202	X-3950-114-1	CABINET (L) ASSY		225	1-672-673-11	FP-46 FLEXIBLE BOARD	
		(TRV17/TRV37/TRV47/TRV57/TRV57P)				(TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
202	X-3950-115-1	CABINET (L) ASSY (TR317/TR517)		226	A-7074-130-A	VL-29 (VHXRIBO) BOARD, COMPLETE	
						(TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
203	3-948-339-61	TAPPING		227	1-676-296-11	FP-147 FLEXIBLE BOARD	
204	3-975-966-01	SHEET METAL (2), SS		* 228	3-058-250-01	SHEET (97), IM GUARD	
* 205	3-058-248-01	HOLDER (97), EL		229	A-7094-702-A	VC-234 (N-LO) BOARD, COMPLETE (SERVICE)	
206	3-949-192-01	HOLDER, STAND-BY KNOB				(TR317)	
207	3-979-642-01	SPRING, COMPRESSION		229	A-7094-703-A	VC-234 BOARD, COMPLETE (SERVICE)(TR517)	
208	3-052-815-01	BELT (ES), GRIP		229	A-7094-711-A	VC-234 (N-VHXRIBO) BOARD, COMPLETE	
209	3-679-362-11	SCREW				(SERVICE)(TRV87/TRV87P)	
210	3-970-854-01	SPRING, STAND-BY		229	A-7094-712-A	VC-234 (N-VHMMBO) BOARD, COMPLETE	
211	3-969-081-01	KNOB, STAND-BY				(SERVICE)(TRV67)	
212	3-302-492-00	SPRING, COMPRESSION		229	A-7094-713-A	VC-234 (N-VMMBO) BOARD, COMPLETE	
						(SERVICE)(TRV57/TRV57P)	
213	3-054-010-01	BUTTON, S/S		229	A-7094-714-A	VC-234 (N-VO) BOARD, COMPLETE (SERVICE)	
214	1-418-758-21	SWITCH BLOCK, CONTROL (SS-9700)		229	A-7094-714-A	VC-234 (N-VO) BOARD, COMPLETE (SERVICE)	
215	A-7074-149-A	EJ-30 (VHXRIBO) BOARD, COMPLETE				(TRV47)	
		(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)		229	A-7094-728-A	VC-234 (N-VBLO) BOARD, COMPLETE (SERVICE)	
215	A-7074-162-A	EJ-29 (CO) BOARD, COMPLETE (TR317/TR517)				(TRV17/TRV37)	
216	3-713-786-21	SCREW (M2X3)		230	1-672-671-11	FP-44 FLEXIBLE BOARD	
						(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
217	1-676-298-11	FP-150 FLEXIBLE BOARD		230	1-676-297-11	FP-149 FLEXIBLE BOARD (TR317/TR517)	
218	X-3948-329-1	LID ASSY, CASSETTE		231	A-7074-116-A	SE-101 (N-VLO) BOARD, COMPLETE	
		(TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P)				(TRV17/TRV37/TRV47)	
218	X-3948-331-1	LID ASSY, CASSETTE (TRV67/TRV87/TRV87P)		231	A-7074-123-A	SE-101 (N-VHMMBO) BOARD, COMPLETE	
219	3-968-729-81	SCREW (M2), LOCK ACE, P2				(TRV57/TRV57P/TRV67)	
* 220	3-058-247-01	PROTECTOR (97), LS FLEXIBLE		231	A-7074-129-A	SE-101 (N-VHXRIBO) BOARD, COMPLETE	
						(TRV87/TRV87P)	
221	1-418-760-11	SWITCH BLOCK, CONTROL (FK-8500)		232	3-053-743-01	FRAME (A), MD	
		(TRV87/TRV87P)		233	3-987-675-01	FRAME (B), MD	
221	1-418-760-21	SWITCH BLOCK, CONTROL (FK-8500)		234	A-7074-115-A	PJ-100 (N-VLO) BOARD, COMPLETE	
		(TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)				(TRV17/TRV37/TRV47/TRV57/TRV57P)	
222	A-7074-113-A	DD-134 (VO) BOARD, COMPLETE (TRV47)		234	A-7074-122-A	PJ-100 (N-VHMMBO) BOARD, COMPLETE	
222	A-7074-119-A	DD-134 (VHMMBO) BOARD, COMPLETE				(TRV67)	
		(TRV17/TRV37/TRV57/TRV57P/TRV67)		234	A-7074-128-A	PJ-100 (N-VHXRIBO) BOARD, COMPLETE	
222	A-7074-125-A	DD-134 (VHXRIBO) BOARD, COMPLETE				(TRV87/TRV87P)	
		(TRV87/TRV87P)		234	A-7074-158-A	PJ-99 (CO) BOARD, COMPLETE (TR317/TR517)	
222	A-7074-151-A	DD-134 (LO) BOARD, COMPLETE (TR317)		235	3-968-729-91	SCREW (M2), LOCK ACE, P2	
222	A-7074-155-A	DD-134 (CO) BOARD, COMPLETE (TR517)					
223	3-053-741-01	FRAME (S), LENS (TR317/TR517/TRV47)					

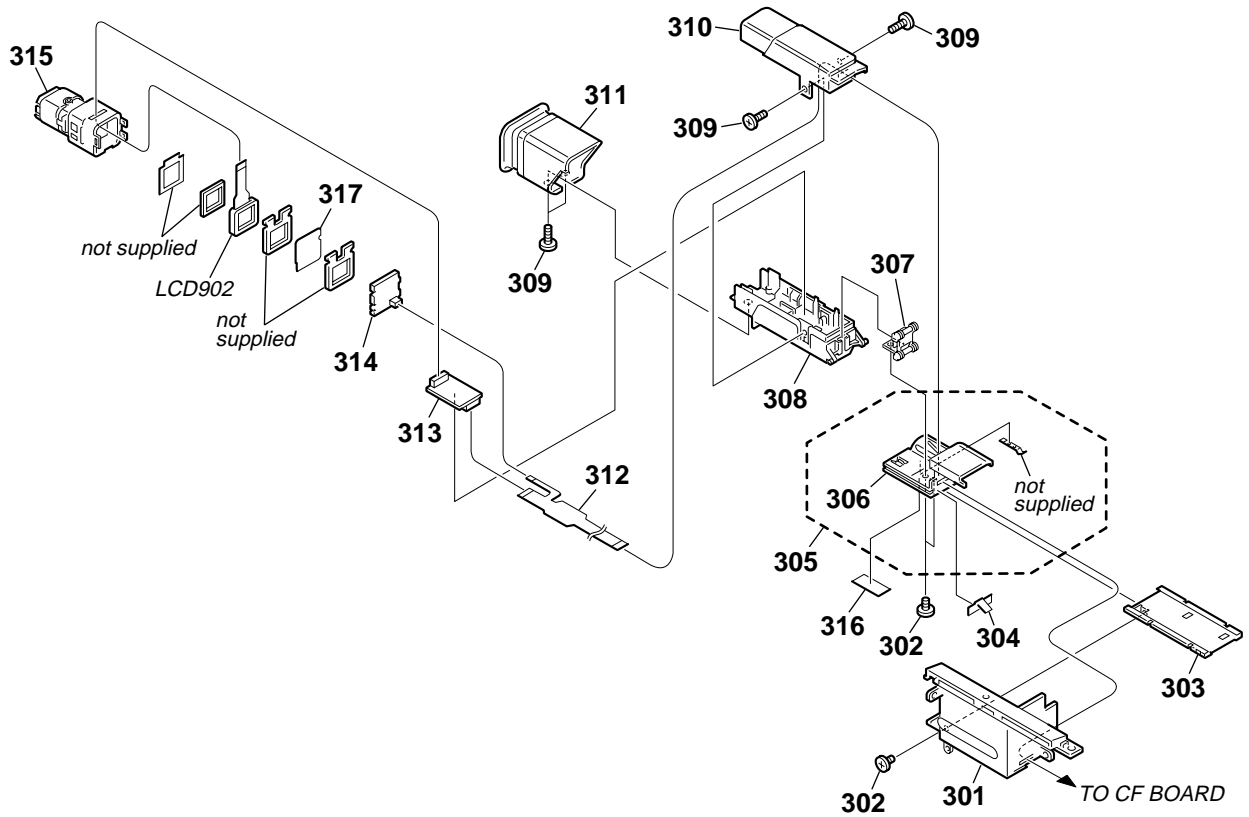
**6-1-6. B/W EVF BLOCK ASSEMBLY
(TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)**



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
251	3-713-786-21	SCREW (M2X3)		260	3-053-679-21	CABINET (LOWER B) (93), EVF(TRV87/TRV87P)	
252	3-058-245-01	BASE (B) (97), VF		261	A-7073-838-A	VF-129 (N) BOARD, COMPLETE	
253	3-053-685-01	LOCK (93), TILT		262	1-792-454-11	CABLE, FLEXIBLE FLAT (FFC-289)	
254	3-948-339-81	TAPPING		263	X-3949-328-2	CABINET (UPPER B) (93) ASSY (TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
255	X-3949-327-1	ARM (B) ASSY, CRANK		263	X-3950-119-1	CABINET (UPPER B) (93) ASSY (TRV87/TRV87P)	
256	3-975-898-01	SCREW (T), F LOCK		Δ V901	1-452-673-61	CRT ASSY (M01KXX90WB)	
257	X-3949-329-1	FINDER (S) ASSY					
258	3-948-339-61	TAPPING					
259	3-053-681-01	TALLY, EVF					
260	3-053-679-02	CABINET (LOWER B) (93), EVF (TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)					

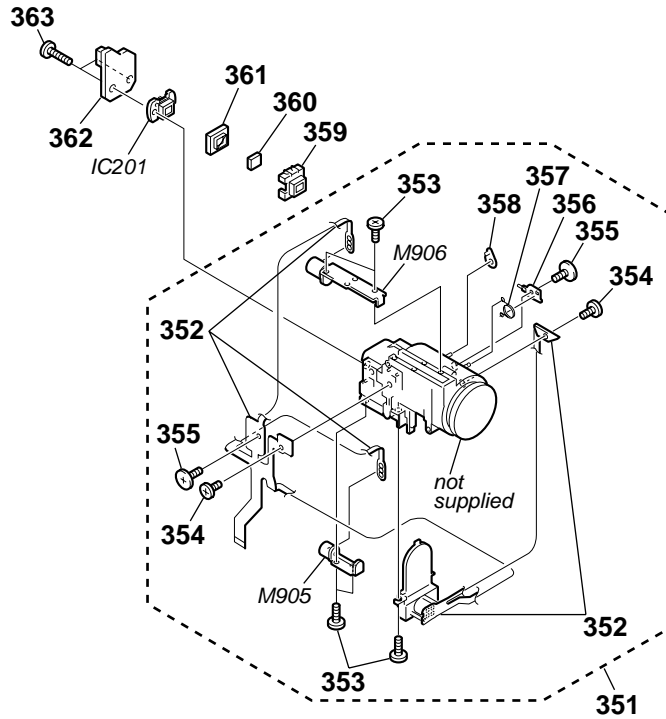
<p>Note : The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.</p>	<p>Note : Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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6-1-7. COLOR EVF BLOCK ASSEMBLY (TR517)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
301	3-058-249-01	BASE (C) (97), VF		310	3-053-671-01	CABINET (UPPER) (C) (92), EVF	
302	3-968-729-81	SCREW (M2), LOCK ACE, P2		311	X-3950-100-1	CABINET (REAR) (C) (97) ASSY, EVF	
303	3-058-231-01	BASE (C) (97), SLIDE FIXED		312	1-676-299-11	FP-151 FLEXIBLE BOARD	
304	3-054-141-01	RETAINER, HARNESS		313	A-7074-193-A	VF-141 BOARD, COMPLETE	
305	X-3950-103-1	BASE (C) (97) ASSY, SLIDE		314	A-7074-192-A	LB-62 BOARD, COMPLETE	
306	3-058-228-01	BASE (C) (97), SLIDE		315	X-3950-101-1	LENS (C) (97) ASSY, VF	
307	X-3949-331-1	ARM (C) ASSY, CRANK		* 316	3-058-899-01	SHEET (97), ELECTROSTATIC	
308	X-3950-102-1	CABINET (LOWER) (C) (97) ASSY, EVF		317	3-058-233-01	ILLUMINATOR (97), BL	
309	3-948-339-81	TAPPING		LCD902	8-753-026-74	LCX0032-AK-J	

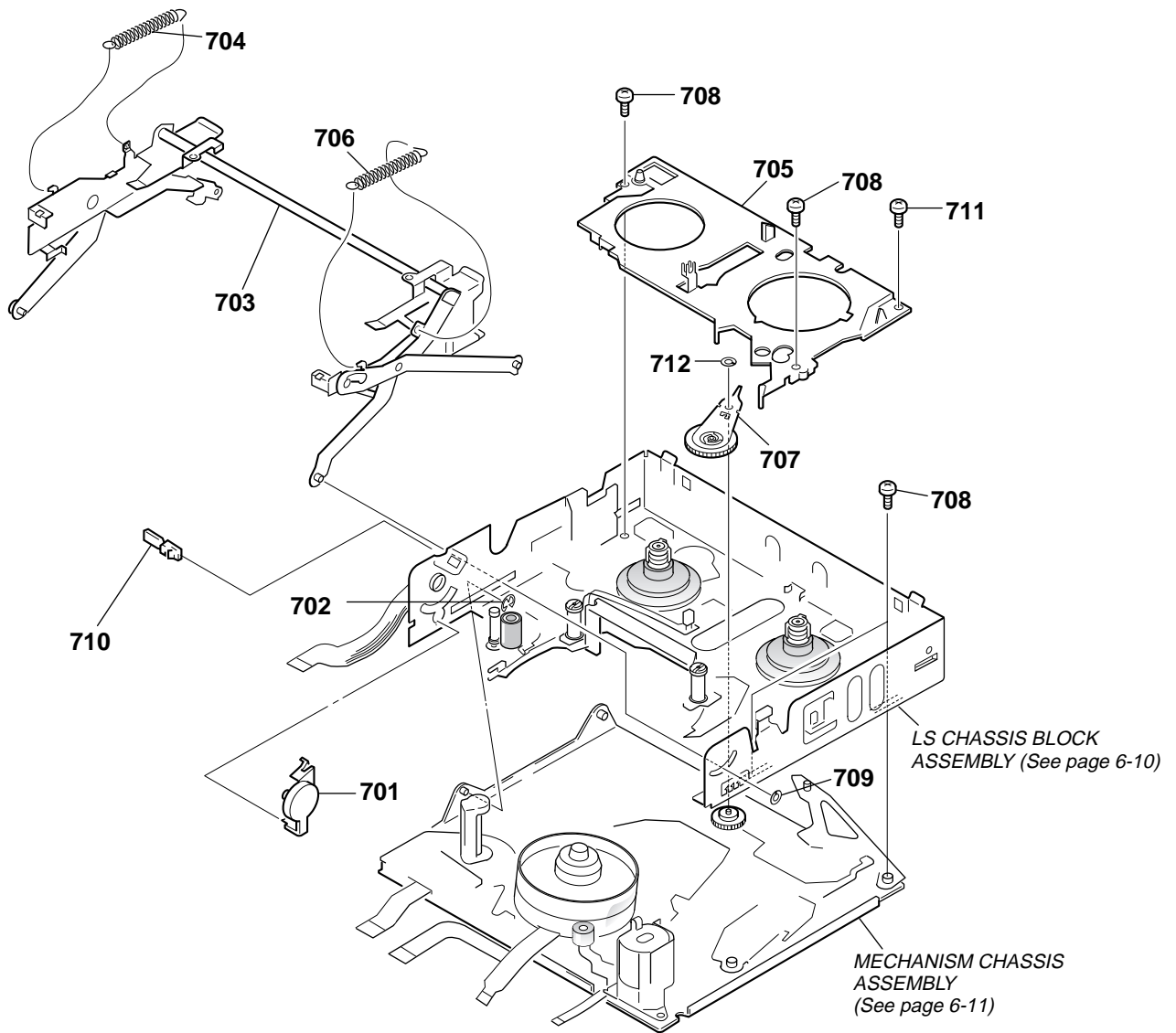
6-1-8. LENS BLOCK ASSEMBLY



Be sure to read "Precautions upon replacing CCD imager" on page 4-8 when changing the CCD imager.

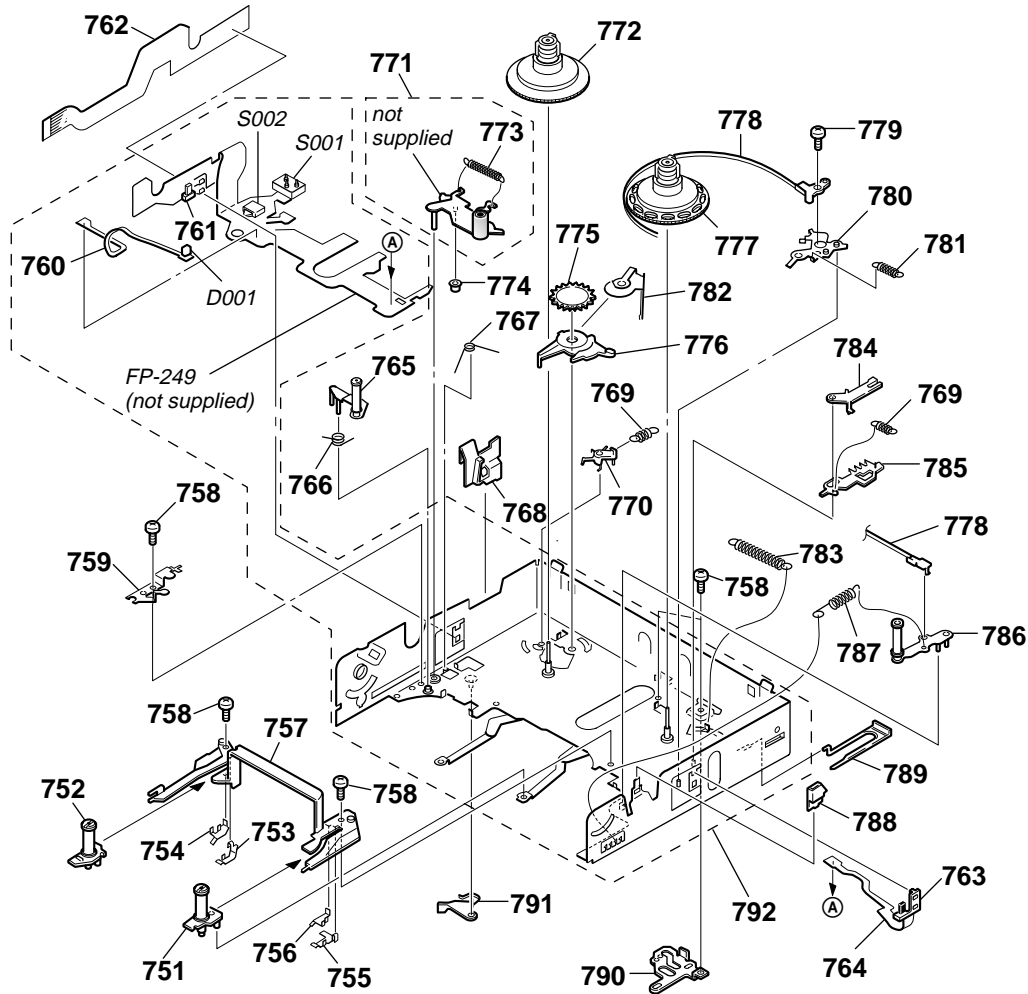
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
351	8-848-729-01	DEVICE, LENS LSV-630A		361	3-968-054-11	RUBBER (FM), SHIELD (TR317/TR517/TRV17/TRV37/TRV47/TRV87/TRV87P)	
352	X-3949-355-2	IRIS FLEXIBLE ASSY 630		362	A-7074-148-A	CD-240 (VHXRIBO) BOARD, COMPLETE (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
353	3-713-791-41	SCREW, TAPPING (M1.7X5), P2		362	A-7074-161-A	CD-239 (CO) BOARD, COMPLETE (TR317/TR517)	
354	3-713-791-51	SCREW, TAPPING (M1.7X3.5), P2		363	3-318-203-11	SCREW (B1.7X6), TAPPING	
355	3-056-022-01	TAPPING (B1.7X3.5), HEAD		IC201	A-7031-040-A	CCD BLOCK ASSY (TR317/TR517/TRV17/TRV37/TRV47)	
356	3-053-827-01	LEVER, IR		IC201	A-7031-052-A	CCD BLOCK ASSY (TRV87/TRV87P)	
357	3-053-800-01	SPRING, RETAIN		IC201	A-7031-055-A	CCD BLOCK ASSY (TRV57/TRV57P/TRV67)	
358	3-053-799-01	GEA, IR		M905	1-763-262-11	MOTOR, STEPPING F630	
359	3-978-981-11	ADAPTOR (FK), CCD FITTING		M906	1-763-046-21	MOTOR, STEPPING Z600	
360	1-758-084-21	FILTER BLOCK, OPTICAL (TR317/TR517/TRV17/TRV37/TRV47/TRV87/TRV87P)					
360	1-758-133-21	FILTER BLOCK, OPTICAL (TRV57/TRV57P/TRV67)					
361	3-953-817-01	RUBBER (F), SEAL (TRV57/TRV57P/TRV67)					

6-1-9. CASSETTE COMPARTMENT ASSEMBLY



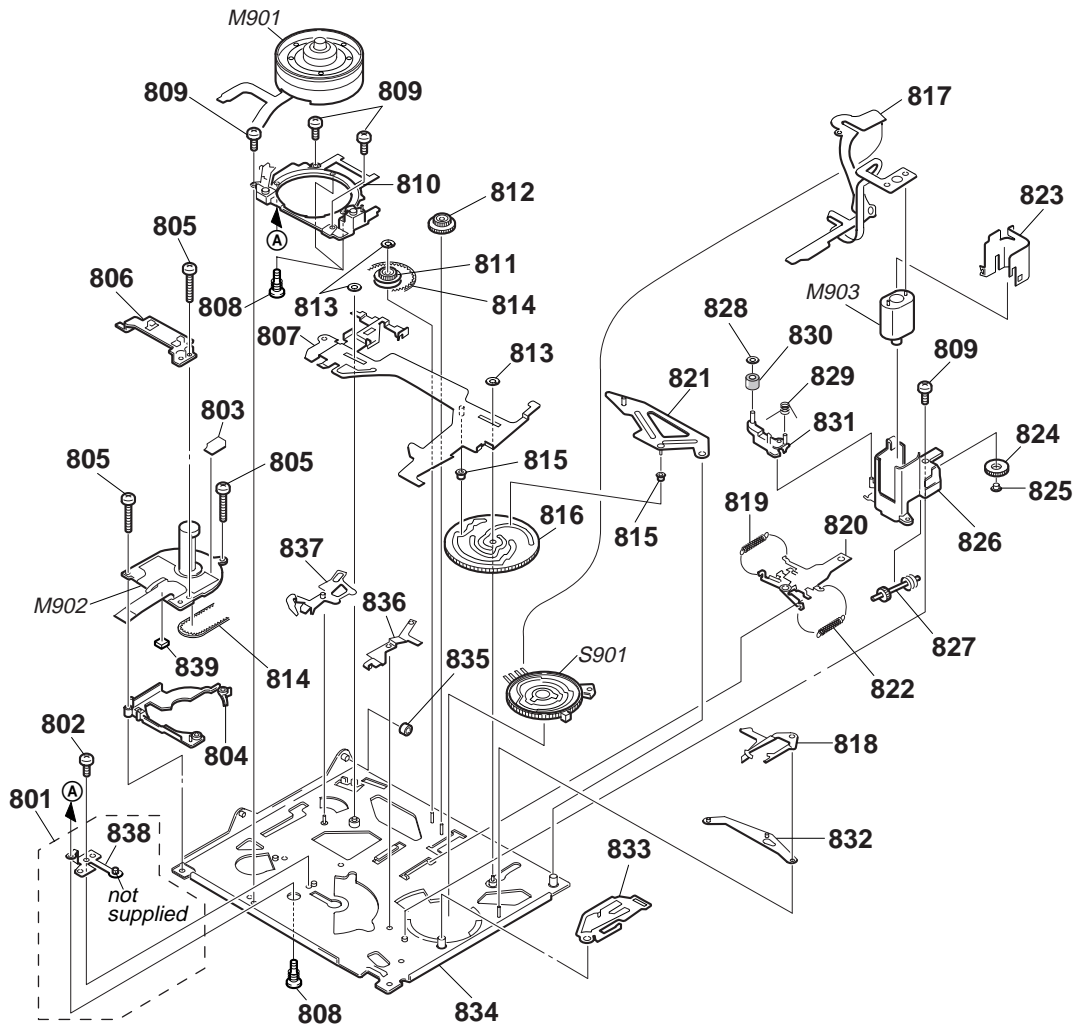
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
701	A-7040-421-A	DAMPER ASSY		707	X-3945-399-1	GEAR ASSY, GOOSENECK	
702	7-624-102-04	STOP RING 1.5, TYPE -E		708	3-947-503-01	SCREW (M1.4X2.5)	
703	X-3949-153-2	CASSETTE COMPARTMENT ASSY		709	3-979-686-01	WASHER, STOPPER	
704	3-965-587-03	SPRING (POWER TENSION),TENSION		710	3-971-076-01	FASTENER, D	
705	3-989-479-01	RETAINER (2), GOOSENECK		711	3-976-055-01	SCREW (M1.4X1)	
706	3-973-268-01	SPRING (POWER TENSION),TENSION		712	3-331-007-21	WASHER	

6-1-10. LS CHASSIS BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE		774	3-965-579-01	ROLLER, PINCH PRESS	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE		775	3-965-563-01	GEAR, T SOFT	
753	3-965-559-01	STOPPER (T)		776	3-965-565-01	CLAW, T SOFT	
754	3-965-557-01	STOPPER (T), GB		777	X-3945-397-1	DECK ASSY, REEL, S	
755	3-965-558-01	STOPPER (S)		778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
756	3-965-556-01	STOPPER (S), GB		779	3-945-756-01	SCREW (M1.4X3)	
757	3-965-553-01	RAIL, GUIDE		780	3-965-583-01	ARM, RVS	
758	3-947-503-01	SCREW (M1.4X2.5)		781	3-965-580-01	SPRING (ARM, RVS), TENSION	
759	3-965-573-01	RETAINER, TG4		782	3-966-384-01	SPRING, T SOFT	
760	1-658-213-11	FP-355 FLEXIBLE BOARD		783	3-965-578-01	SPRING, TENSION COIL	
761	3-965-552-01	HOLDER,SENSOR(T)		784	3-965-560-01	RATCHET, S	
762	1-657-786-13	FP-221 FLEXIBLE BOARD		785	3-965-561-01	PLATE, RELEASE, S RATCHET	
763	3-965-551-01	HOLDER,SENSOR(S)		786	X-3945-395-1	ARM ASSY, TG1	
764	1-658-214-11	FP-356 FLEXIBLE BOARD		787	3-965-576-01	SPRING (TG1), TENSION	
765	A-7040-417-A	ARM BLOCK ASSY, TG4		788	3-965-567-01	LID OPEN	
766	3-965-574-01	SPRING (RETURN, TG4), TORSION		789	3-965-566-01	COVER, LS GUIDE	
767	3-965-575-01	SPRING (PINCH), TORSION		* 790	3-965-577-01	PLATE, CAM, LS	
768	3-965-568-11	GUIDE, LOCK		791	3-965-569-01	ARM, EJ	
769	3-965-562-01	SPRING (RATCHET), TENSION		792	A-7040-427-B	CHASSIS (S1) ASSY, LS	
770	3-965-581-03	RATCHET, T		D001	8-719-988-42	DIODE GL453	
771	X-3949-380-1	ARM ASSY (E), PINCH		S001	1-682-614-11	SWITCH,PUSH (3KEY) (Hi8 MP,ME/MP,REC PROOF)	
772	X-3945-398-2	DECK ASSY, REEL, T		S002	1-572-688-11	SWITCH, PUSH (1 KEY) (C.C.LOCK)	
773	3-965-648-01	SPRING (PINCH), TENSION					

6-1-11. MECHANISM CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT		823	3-965-542-01	SHIELD, MOTOR	
802	3-965-550-02	SCREW (M1.7X1.6)		824	3-965-539-01	GEAR (A)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD		825	3-965-538-01	SLEEVE, MOTOR HOLDER	
804	3-054-404-01	SPACER, CAPSTAN		826	3-965-540-01	HOLDER, MOTOR	
805	3-965-549-01	SCREW (M1.4 X 6.5)		827	3-965-541-01	SHAFT, WORM	
806	3-966-349-01	HOLDER, FLEXIBLE		828	3-321-393-01	WASHER, STOPPER	
807	3-971-644-02	SLIDER (2), M		829	3-965-724-01	SPRING (RETURN, HC), TORSION	
808	X-3947-895-1	SCREW ASSY, DRUM ATTACHED		830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
809	3-947-503-01	SCREW (M1.4X2.5)		831	X-3945-407-1	ARM ASSY, HC ROLLER	
810	A-7040-494-A	BASE BLOCK ASSY, DRUM		832	3-965-531-01	ARM, GL	
811	3-965-527-01	GEAR, CHANGE		833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
812	3-965-544-01	GEAR, RELAY		834	X-3949-589-2	CHASSIS ASSY, MECHANICAL	
813	3-331-007-21	WASHER		835	3-965-526-02	ROLLER, LS GUIDE	
814	3-965-546-01	BELT, TIMING		836	3-965-547-01	ARM, HC DRIVING	
815	3-965-533-01	ROLLER, LS		837	3-965-534-01	PLATE, PRESS, PINCH	
816	3-965-528-01	GEAR, CAM		838	3-974-320-02	GROUND (IM), SHAFT	
817	1-657-784-11	FP-220 FLEXIBLE BOARD		839	3-987-953-01	SPACER, RUBBER	
818	3-965-529-01	PLATE, REGULATOR, TENSION		S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
819	3-965-536-01	SPRING (LIMITTER ARM T), COIL		M901	A-7048-897-A	DRUM BLOCK ASSY (DGH-0FOA-R)(NTSC)	
820	X-3945-388-1	SLIDER ASSY, GL		M902	8-835-531-32	MOTOR, DC SCE-0601A/C-NP (CAPSTAN)	
821	3-965-532-21	ARM, LS		M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
822	3-965-535-01	SPRING (LIMITTER ARM S), COIL					

6-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: μF
- COILS
uH: μH

- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- SEMICONDUCTORS
In each case, u: μ, for example:
uA...: μA... , uPA... , μPA... ,
uPB... , μPB... , uPC... , μPC... ,
uPD... , μPD...
- Abbreviation
CND: Canadian model
KR: Korea model
HK: Hong Kong model
JE: Tourist model

When indicating parts by reference number, please include the board name.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
	A-7074-161-A	CD-239 BOARD, COMPLETE (TR317/TR517) ***** (Ref.No.;1000 Series) (IC201 is not included in this complete board.) < CAPACITOR >	
C201	1-135-214-21	TANTAL. CHIP 4.7uF	20% 20V
C204	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C205	1-135-210-11	TANTALUM CHIP 4.7uF	20% 10V
		< CONNECTOR >	
CN201	1-573-354-11	CONNECTOR, FFC/FPC 14P < COIL >	
L201	1-414-757-11	INDUCTOR 100uH < TRANSISTOR >	
Q201	8-729-117-73	TRANSISTOR 2SC4178-F13F14-T1 < RESISTOR >	
R201	1-216-797-11	METAL CHIP 10	5% 1/16W
R202	1-216-809-11	METAL CHIP 100	5% 1/16W
R203	1-216-833-91	RES-CHIP 10K	5% 1/16W

	A-7074-148-A	CD-240 BOARD, COMPLETE (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P) ***** (Ref.No.;1000 Series) (IC201 is not included in this complete board.) < CAPACITOR >	
C201	1-135-214-21	TANTAL. CHIP 4.7uF	20% 20V
C204	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C205	1-135-210-11	TANTALUM CHIP 4.7uF	20% 10V
		< CONNECTOR >	
CN201	1-573-354-11	CONNECTOR, FFC/FPC 14P < COIL >	
L201	1-414-757-11	INDUCTOR 100uH	

Ref. No.	Part No.	Description	Remarks
		< TRANSISTOR >	
Q201	8-729-117-73	TRANSISTOR 2SC4178-F13F14-T1 < RESISTOR >	
R201	1-216-797-11	METAL CHIP 10	5% 1/16W
R202	1-216-809-11	METAL CHIP 100	5% 1/16W
R203	1-216-833-91	RES-CHIP 10K	5% 1/16W
	A-7074-152-A	CF-66 BOARD, COMPLETE (TR317) *****	
	A-7074-156-A	CF-66 BOARD, COMPLETE (TR517) ***** (Ref.No.;1000 Series) < BATTERY HOLDER >	
BH001	1-550-104-11	HOLDER, BATTERY < BUZZER >	
BZ002	1-529-104-21	BUZZER, PIEZOELECTRIC < CAPACITOR >	
C003	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C004	1-110-569-11	TANTAL. CHIP 47uF	20% 6.3V (TR317)
C004	1-119-661-11	TANTAL. CHIP 33uF	20% 6.3V (TR517)
		< CONNECTOR >	
CN001	1-785-760-11	CONNECTOR, FFC/FPC (ZIF) 45P	
CN002	1-774-765-11	CONNECTOR, FFC/FPC 8P	
CN006	1-779-334-11	CONNECTOR, FFC/FPC 20P (TR517)	
* CN007	1-778-283-11	CONNECTOR, FFC/FPC 4P (TR317)	
CN010	1-691-364-21	CONNECTOR, FFC/FPC (ZIF) 26P < DIODE >	
D002	8-719-421-27	DIODE MA728-(K8).S0	
D005	8-719-073-03	DIODE MA8082-(K8).S0	
D006	8-719-073-03	DIODE MA8082-(K8).S0	
D008	8-719-073-01	DIODE MA111-TX < IC >	
IC001	8-759-573-02	IC BU9735K-E2	

Be sure to read "Precautions upon replacing CCD imager" on page 4-8 when changing the CCD imager.

Ref. No.	Part No.	Description	Quantity	Remarks	Ref. No.	Part No.	Description	Quantity	Remarks
		< COIL >				A-7074-126-A	CF-67 BOARD, COMPLETE (TRV87/TRV87P)		*****
L001	1-216-295-91	SHORT	0	(TR517)		A-7074-120-A	CF-67 BOARD, COMPLETE (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		***** (Ref.No.:1000 Series)
L002	1-216-295-91	SHORT	0	(TR517)					
L003	1-216-295-91	SHORT	0	(TR517)					
L004	1-469-527-91	INDUCTOR	47uH						
L005	1-469-527-91	INDUCTOR	47uH						
		< TRANSISTOR >					< BATTERY HOLDER >		
Q001	8-729-402-42	TRANSISTOR	UN5213-TX	(TR317)	BH001	1-550-104-11	HOLDER, BATTERY		
		< RESISTOR >					< CAPACITOR >		
R001	1-216-864-11	METAL CHIP	0	5%	1/16W (TR517)	C001	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
R005	1-216-833-91	RES-CHIP	10K	5%	1/16W	C004	1-110-569-11	TANTAL. CHIP	47uF 20% 6.3V
R006	1-216-833-91	RES-CHIP	10K	5%	1/16W				< CONNECTOR >
R007	1-216-833-91	RES-CHIP	10K	5%	1/16W	CN001	1-785-760-21	CONNECTOR, FFC/FPC (ZIF) 45P	
R008	1-216-833-91	RES-CHIP	10K	5%	1/16W	CN002	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
R011	1-216-855-11	METAL CHIP	680K	5%	1/16W	* CN003	1-580-055-21	PIN, CONNECTOR (SMD) 2P	
R012	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	CN004	1-779-064-11	PIN, CONNECTOR (PC BOARD) 12P	
R013	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	CN005	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	
R014	1-216-826-11	METAL CHIP	2.7K	5%	1/16W				
R015	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	CN007	1-778-283-11	CONNECTOR, FFC/FPC 4P	
R016	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	CN008	1-766-644-21	CONNECTOR, FFC/FPC 8P (TRV87/TRV87P)	
R017	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	CN008	1-774-633-11	CONNECTOR, FFC/FPC 8P (TRV87/TRV87P)	
R018	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	* CN009	1-580-055-21	PIN, CONNECTOR (SMD) 2P	
R019	1-216-825-11	METAL CHIP	2.2K	5%	1/16W				< DIODE >
R020	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	D002	8-719-062-16	DIODE 01ZA8.2(TPL3)	
R021	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	D008	8-719-421-27	DIODE MA728-(K8).SO	
R023	1-216-834-11	METAL CHIP	12K	5%	1/16W	D009	8-719-073-01	DIODE MA111-TX	
R025	1-216-832-11	METAL CHIP	8.2K	5%	1/16W				< TRANSISTOR >
R028	1-216-864-11	METAL CHIP	0	5%	1/16W (TR517)	Q001	8-729-402-42	TRANSISTOR	UN5213-TX
R032	1-216-838-11	METAL CHIP	27K	5%	1/16W	Q002	8-729-230-63	TRANSISTOR	2SD1819A-QRS-TX (TRV87/TRV87P)
R044	1-216-864-11	METAL CHIP	0	5%	1/16W (TR517)	Q003	8-729-230-72	TRANSISTOR	2SA1362-YG-EL (TRV87/TRV87P)
R045	1-216-864-11	METAL CHIP	0	5%	1/16W (TR517)				< RESISTOR >
R046	1-216-864-11	METAL CHIP	0	5%	1/16W (TR517)	R002	1-216-833-91	RES-CHIP	10K 5% 1/16W
R047	1-216-864-11	METAL CHIP	0	5%	1/16W (TR517)	R003	1-216-833-91	RES-CHIP	10K 5% 1/16W
R048	1-216-864-11	METAL CHIP	0	5%	1/16W (TR317)	R004	1-216-833-91	RES-CHIP	10K 5% 1/16W
		< SWITCH >				R005	1-216-833-91	RES-CHIP	10K 5% 1/16W
S002	1-771-138-61	SWITCH, KEY BOARD (DATE)				R006	1-216-822-11	METAL CHIP	1.2K 5% 1/16W
S005	1-771-138-61	SWITCH, KEY BOARD (COUNTER RESET)				R007	1-216-822-11	METAL CHIP	1.2K 5% 1/16W
S006	1-771-029-21	SWITCH, TACTILE (MENU) (TR317/TR517)				R008	1-216-822-11	METAL CHIP	1.2K 5% 1/16W
S007	1-771-029-21	SWITCH, TACTILE (EXPOSURE)				R009	1-216-849-11	METAL CHIP	220K 5% 1/16W (TRV87/TRV87P)
S008	1-771-025-41	SWITCH, ROTARY (SEL/PUSH EXEC) (TR317/TR517)				R010	1-216-833-91	RES-CHIP	10K 5% 1/16W (TRV87/TRV87P)
S009	1-771-138-61	SWITCH, KEY BOARD (BACK LIGHT) (TR317/TR517)				R011	1-216-853-11	METAL CHIP	470K 5% 1/16W (TRV87/TRV87P)
S010	1-771-138-61	SWITCH, KEY BOARD (TITLE) (TR317/TR517)				R012	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
S011	1-771-138-61	SWITCH, KEY BOARD (TIME)				R013	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
S012	1-771-138-61	SWITCH, KEY BOARD (FADER)				R014	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
S014	1-771-138-61	SWITCH, KEY BOARD (PROGRAM AE)				R015	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV87/TRV87P)
S015	1-771-138-61	SWITCH, KEY BOARD (PICTURE EFFECT) (TR317/TR517)				R016	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (TRV87/TRV87P)

Ref. No.	Part No.	Description	Remarks
R017	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R018	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R019	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R020	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
R021	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
R022	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
R026	1-216-832-11	METAL CHIP 8.2K 5%	1/16W
R027	1-216-832-11	METAL CHIP 8.2K 5%	1/16W
R034	1-216-838-11	METAL CHIP 27K 5%	1/16W
R036	1-216-838-11	METAL CHIP 27K 5%	1/16W
R043	1-216-864-11	METAL CHIP 0 5%	1/16W
R048	1-216-864-11	METAL CHIP 0 5%	1/16W
< SWITCH >			
S001	1-771-138-61	SWITCH, KEY BOARD (DIGITAL EFFECT) (TRV87/TRV87P)	
S002	1-771-138-61	SWITCH, KEY BOARD (DATE)	
S003	1-771-029-21	SWITCH, TACTILE (PROGRAM AE)	
S004	1-771-138-61	SWITCH, KEY BOARD (PICTURE EFFECT)	
S005	1-771-138-61	SWITCH, KEY BOARD (COUNTER RESET)	
S006	1-771-138-61	SWITCH, KEY BOARD (MENU)	
S007	1-771-029-21	SWITCH, TACTILE (EXPOSURE)	
S008	1-771-138-61	SWITCH, KEY BOARD (END SEARCH)	
S009	1-771-025-41	SWITCH, ROTARY (ENCODER)	
S010	1-771-029-21	SWITCH, TACTILE (BACK LIGHT)	
S011	1-771-138-61	SWITCH, KEY BOARD (TIME)	
S012	1-771-138-61	SWITCH, KEY BOARD (FADER)	
S013	1-771-029-31	SWITCH, TACTILE (FADER)	
S014	1-771-138-61	SWITCH, KEY BOARD (PROGRAM AE)	
A-7074-151-A	DD-134 BOARD, COMPLETE (TR317)	*****	
A-7074-155-A	DD-134 BOARD, COMPLETE (TR517)	*****	
A-7074-119-A	DD-134 BOARD, COMPLETE (TRV17/TRV37/TRV57/TRV57P/TRV67)	*****	
A-7074-125-A	DD-134 BOARD, COMPLETE (TRV87/TRV87P)	*****	
A-7074-113-A	DD-134 BOARD, COMPLETE (TRV47)	***** (Ref.No.:1000 Series)	
< CAPACITOR >			
C301	1-162-960-11	CERAMIC CHIP 220PF 10%	50V
C302	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C303	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V
C304	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C305	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C308	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C309	1-164-172-11	CERAMIC CHIP 0.0056uF 10%	25V
C310	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V
C311	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V
C312	1-162-962-11	CERAMIC CHIP 470PF 10%	50V
C313	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V
C314	1-162-965-11	CERAMIC CHIP 0.0015uF 10%	50V
C315	1-162-966-11	CERAMIC CHIP 0.0022uF 10%	50V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
C316	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C317	1-162-962-11	CERAMIC CHIP 470PF 10%	50V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)

Ref. No.	Part No.	Description	Remarks
C318	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C321	1-113-991-11	TANTAL. CHIP 33uF 20%	16V
C323	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C324	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C325	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C326	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V
C327	1-164-156-11	CERAMIC CHIP 0.1uF	25V
C328	1-115-566-11	CERAMIC CHIP 4.7uF 10%	10V
C329	1-115-566-11	CERAMIC CHIP 4.7uF 10%	10V
C330	1-115-566-11	CERAMIC CHIP 4.7uF 10%	10V
C332	1-127-760-91	CERAMIC CHIP 4.7uF 10%	6.3V
C333	1-127-760-91	CERAMIC CHIP 4.7uF 10%	6.3V
C335	1-162-974-11	CERAMIC CHIP 0.01uF (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	50V
C336	1-127-760-91	CERAMIC CHIP 4.7uF 10%	6.3V
C337	1-127-760-91	CERAMIC CHIP 4.7uF 10%	6.3V
C338	1-127-760-91	CERAMIC CHIP 4.7uF 10%	6.3V
C339	1-115-566-11	CERAMIC CHIP 4.7uF 10%	10V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
C340	1-127-688-21	TANTAL. CHIP 10uF 20%	6.3V
C341	1-135-149-21	TANTALUM CHIP 2.2uF 20%	10V
C342	1-119-750-11	TANTAL. CHIP 22uF 20%	6.3V
C343	1-125-837-91	CERAMIC CHIP 1uF 10%	6.3V
C344	1-164-506-11	CERAMIC CHIP 4.7uF	16V
C345	1-164-506-11	CERAMIC CHIP 4.7uF	16V
C346	1-127-688-21	TANTAL. CHIP 10uF 20%	6.3V
C347	1-119-749-11	TANTAL. CHIP 33uF 20%	4V
C348	1-119-750-11	TANTAL. CHIP 22uF 20%	6.3V
C349	1-164-505-11	CERAMIC CHIP 2.2uF (TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	16V
C350	1-164-156-11	CERAMIC CHIP 0.1uF 25V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
C351	1-127-688-21	TANTAL. CHIP 10uF 20%	6.3V
C352	1-127-760-91	CERAMIC CHIP 4.7uF 10%	6.3V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
C353	1-135-149-21	TANTALUM CHIP 2.2uF 20%	10V
C354	1-127-688-21	TANTAL. CHIP 10uF 20%	6.3V
C355	1-125-822-11	TANTALUM 10uF 20%	10V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
C356	1-127-688-21	TANTAL. CHIP 10uF 20%	6.3V
C358	1-164-506-11	CERAMIC CHIP 4.7uF	16V
C360	1-107-826-91	CERAMIC CHIP 0.1uF 10%	16V
C361	1-164-505-11	CERAMIC CHIP 2.2uF 16V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
C362	1-164-346-11	CERAMIC CHIP 1uF 16V (TR517)	
C363	1-164-505-11	CERAMIC CHIP 2.2uF 16V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
C364	1-164-506-11	CERAMIC CHIP 4.7uF	16V
C366	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
C367	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >					
* CN301	1-580-756-21	PIN, CONNECTOR (SMD) 7P		L314	1-412-056-11	INDUCTOR 4.7uH	
CN931	1-691-520-11	CONNECTOR, BOARD TO BOARD 48P		L315	1-414-400-41	INDUCTOR 22uH	
CN933	1-779-893-11	PIN, CONNECTOR (PC BOARD) 8P		L316	1-412-056-11	INDUCTOR 4.7uH	
		(TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)		L317	1-414-400-41	INDUCTOR 22uH	
				L318	1-416-669-11	INDUCTOR 22uH	(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
		< DIODE >					
D301	8-719-062-16	DIODE 01ZA8.2(TPL3)		L319	1-412-056-11	INDUCTOR 4.7uH	(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
D301	8-719-045-87	DIODE MA4Z082WA-(K8).SO					
D302	8-719-421-27	DIODE MA728-(K8).SO					< TRANSISTOR >
D304	8-719-073-03	DIODE MA8082-(K8).SO					
D305	8-719-056-89	DIODE MA8120-TX		Q301	8-729-047-68	TRANSISTOR 2SK1830-TE85L	
D306	8-719-078-02	DIODE 1SS357(T3SONY1)		△ Q302	8-729-046-77	TRANSISTOR SI4963DY-T1	
D308	8-719-078-02	DIODE 1SS357(T3SONY1)		Q303	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
		(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)		Q304	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
D310	8-719-078-02	DIODE 1SS357(T3SONY1)		Q305	8-729-047-68	TRANSISTOR 2SK1830-TE85L	
D311	8-719-078-02	DIODE 1SS357(T3SONY1)					
D312	8-719-078-02	DIODE 1SS357(T3SONY1)		Q307	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
		(TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)		Q308	8-729-046-98	TRANSISTOR CPH6702-TL	
D312	8-719-027-76	DIODE 1SS357-TPH3 (TR517)		Q309	8-729-046-98	TRANSISTOR CPH6702-TL	
D313	8-719-078-02	DIODE 1SS357(T3SONY1)		Q310	8-729-046-98	TRANSISTOR CPH6702-TL	
		(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)		Q311	8-729-046-98	TRANSISTOR CPH6702-TL	
		< FUSE >					
△ F302	1-576-406-21	FUSE, MICRO (1608) (1.4A)		Q312	8-729-046-98	TRANSISTOR CPH6702-TL	
△ F303	1-576-406-21	FUSE, MICRO (1608) (1.4A)		Q313	8-729-044-58	TRANSISTOR SI2304DS-T1	
△ F304	1-576-406-21	FUSE, MICRO (1608) (1.4A)		Q316	8-729-046-98	TRANSISTOR CPH6702-TL	
△ F305	1-576-406-21	FUSE, MICRO (1608) (1.4A)					(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
		(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)		Q317	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
△ F306	1-576-406-21	FUSE, MICRO (1608) (1.4A)		Q318	8-729-101-07	TRANSISTOR 2SB798-T1-DLDK	
		(TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)					
		< FERRITE BEAD >					
FB310	1-500-238-22	FERRITE OUH		Q319	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
FB320	1-500-238-22	FERRITE OUH (TR517)		Q320	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
FB321	1-500-238-22	FERRITE OUH		Q321	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
		(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)		Q322	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
				Q323	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
		< IC >					
IC301	8-752-090-20	IC CXA3057R-T6		Q325	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
				Q327	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
		< COIL >					
L301	1-416-670-11	INDUCTOR 33uH		Q328	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
L302	1-416-669-11	INDUCTOR 22uH					
L303	1-412-056-11	INDUCTOR 4.7uH		Q329	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
L304	1-416-669-11	INDUCTOR 22uH		Q330	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
L305	1-416-670-11	INDUCTOR 33uH					
L306	1-416-669-11	INDUCTOR 22uH		Q331	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
L307	1-412-056-11	INDUCTOR 4.7uH		Q332	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
L308	1-412-056-11	INDUCTOR 4.7uH					
L309	1-412-056-11	INDUCTOR 4.7uH		Q333	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
L313	1-414-400-41	INDUCTOR 22uH					
							< RESISTOR >
				R301	1-216-837-11	METAL CHIP 22K 5% 1/16W	
				R302	1-216-839-11	METAL CHIP 33K 5% 1/16W	
				R303	1-216-821-11	METAL CHIP 1K 5% 1/16W	
				R304	1-216-839-11	METAL CHIP 33K 5% 1/16W	
							(TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
				R305	1-216-837-11	METAL CHIP 22K 5% 1/16W	

Note :

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note :

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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R306	1-216-821-11	METAL CHIP	1K 5% 1/16W	R348	1-218-887-11	METAL CHIP	47K 0.5% 1/16W
R307	1-216-864-11	METAL CHIP	0 5% 1/16W	R349	1-218-877-11	METAL CHIP	18K 0.5% 1/16W
R309	1-216-853-11	METAL CHIP	470K 5% 1/16W				(TRV87/TRV87P)
R310	1-216-857-11	METAL CHIP	1M 5% 1/16W	R349	1-216-864-11	METAL CHIP	0 5% 1/16W
R311	1-216-813-11	METAL CHIP	220 5% 1/16W				(TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)
R312	1-216-839-11	METAL CHIP	33K 5% 1/16W	R354	1-216-833-91	RES-CHIP	10K 5% 1/16W
R313	1-216-150-91	RES-CHIP	10 5% 1/8W				(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)
R314	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R357	1-218-879-11	METAL CHIP	22K 0.5% 1/16W
R315	1-216-837-11	METAL CHIP	22K 5% 1/16W	R358	1-218-871-11	METAL CHIP	10K 0.5% 1/16W
R316	1-216-821-11	METAL CHIP	1K 5% 1/16W				< TRANSFORMER >
R317	1-216-831-11	METAL CHIP	6.8K 5% 1/16W				
R318	1-216-837-11	METAL CHIP	22K 5% 1/16W	△ T301	1-435-252-21	TRANSFORMER, DC-DC CONVERTER	
			(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)				
R319	1-216-841-11	METAL CHIP	47K 5% 1/16W				
R322	1-216-296-91	SHORT	0		A-7074-162-A	EJ-29 BOARD, COMPLETE (TR317/TR517)	
			(TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)			*****	
R323	1-216-841-11	METAL CHIP	47K 5% 1/16W			(Ref.No.;1000 Series)	
R324	1-216-829-11	METAL CHIP	4.7K 5% 1/16W				< CONNECTOR >
R325	1-216-841-11	METAL CHIP	47K 5% 1/16W	CN251	1-766-346-21	CONNECTOR, FFC/FPC 16P	
R326	1-216-837-11	METAL CHIP	22K 5% 1/16W	CN252	1-764-709-11	CONNECTOR, FFC/FPC 10P	
R327	1-218-879-11	METAL CHIP	22K 0.5% 1/16W	CN253	1-764-703-11	CONNECTOR, FFC/FPC (LIF) 4P	
R328	1-218-871-11	METAL CHIP	10K 0.5% 1/16W				< DIODE >
R329	1-216-845-11	METAL CHIP	100K 5% 1/16W	D253	8-719-062-16	DIODE 01ZA8.2(TPL3)	
R330	1-216-864-11	METAL CHIP	0 5% 1/16W	D256	8-719-073-01	DIODE MA111-TX	
R331	1-216-864-11	METAL CHIP	0 5% 1/16W	D257	8-719-073-01	DIODE MA111-TX	
R332	1-218-877-11	METAL CHIP	18K 0.5% 1/16W				< FERRITE BEAD >
R333	1-216-837-11	METAL CHIP	22K 5% 1/16W	FB251	1-500-238-22	FERRITE 0UH	
R335	1-218-891-11	METAL CHIP	68K 0.5% 1/16W	FB252	1-500-238-22	FERRITE 0UH	
R336	1-218-891-11	METAL CHIP	68K 0.5% 1/16W	FB253	1-500-238-22	FERRITE 0UH	
			(TRV87/TRV87P)				< JACK >
R336	1-218-895-11	METAL CHIP	100K 0.5% 1/16W				
			(TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	J251	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
R337	1-218-879-11	METAL CHIP	22K 0.5% 1/16W				< RESISTOR >
			(TRV87/TRV87P)	R251	1-216-821-11	METAL CHIP	1K 5% 1/16W
R337	1-216-864-11	METAL CHIP	0 5% 1/16W	R252	1-216-821-11	METAL CHIP	1K 5% 1/16W
			(TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	R253	1-216-821-11	METAL CHIP	1K 5% 1/16W
R338	1-218-903-11	METAL CHIP	220K 0.5% 1/16W	R254	1-216-821-11	METAL CHIP	1K 5% 1/16W
R339	1-216-845-11	METAL CHIP	100K 5% 1/16W	R255	1-216-821-11	METAL CHIP	1K 5% 1/16W
			(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)	R256	1-216-821-11	METAL CHIP	1K 5% 1/16W
R340	1-216-841-11	METAL CHIP	47K 5% 1/16W	R257	1-216-821-11	METAL CHIP	1K 5% 1/16W
R341	1-216-845-11	METAL CHIP	100K 5% 1/16W	R258	1-216-821-11	METAL CHIP	1K 5% 1/16W
R342	1-216-845-11	METAL CHIP	100K 5% 1/16W	R259	1-216-029-00	METAL CHIP	150 5% 1/10W
			(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)				< SWITCH >
R343	1-216-837-11	METAL CHIP	22K 5% 1/16W	S251	1-771-331-21	SWITCH, PUSH (1 KEY) (EJECT)	
R344	1-216-864-11	METAL CHIP	0 5% 1/16W				
			(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)				
R345	1-218-903-11	METAL CHIP	220K 0.5% 1/16W				
			(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)				
R346	1-218-891-11	METAL CHIP	68K 0.5% 1/16W				
			(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)				
R347	1-218-895-11	METAL CHIP	100K 0.5% 1/16W				

Note :

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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-7074-149-A	EJ-30 BOARD, COMPLETE (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P) ***** (Ref.No.;1000 Series)			1-658-213-11	FP-355 FLEXIBLE BOARD ***** (Ref.No.;1000 Series)	
		< CONNECTOR >				< DIODE >	
CN251	1-766-346-21	CONNECTOR, FFC/FPC 16P		D001	8-719-988-42	DIODE GL453	
CN252	1-764-709-11	CONNECTOR, FFC/FPC 10P					
CN253	1-764-703-11	CONNECTOR, FFC/FPC (LIF) 4P			1-658-214-11	FP-356 FLEXIBLE BOARD ***** (Ref.No.;1000 Series)	
		< DIODE >			3-965-551-01	HOLDER (S), SENSOR	
D253	8-719-062-16	DIODE 01ZA8.2(TPL3)				< TRANSISTOR >	
D256	8-719-073-01	DIODE MA111-TX					
D257	8-719-073-01	DIODE MA111-TX		Q002	8-729-907-25	PHOTO TRANISTOR PT4850F (TAPE END)	
		< FERRITE BEAD >					
FB251	1-414-228-11	INDUCTOR CHIP 0UH			A-7074-192-A	LB-62 BOARD, COMPLETE (TR517) ***** (Ref.No.;1000 Series)	
FB252	1-414-228-11	INDUCTOR CHIP 0UH				< CAPACITOR >	
FB253	1-414-228-11	INDUCTOR CHIP 0UH		C4601	1-113-682-11	TANTAL. CHIP 33uF 20% 10V	
		< JACK >		C4602	1-127-760-91	CERAMIC CHIP 4.7uF 10% 6.3V	
J251	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)		C4603	1-115-464-91	CERAMIC CHIP 0.0022uF 10% 630V	
		< RESISTOR >		C4604	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V	
R251	1-216-821-11	METAL CHIP 1K 5% 1/16W				< CONNECTOR >	
R252	1-216-821-11	METAL CHIP 1K 5% 1/16W		CN4601	1-764-516-21	CONNECTOR, FFC/FPC (ZIF) 6P	
R253	1-216-821-11	METAL CHIP 1K 5% 1/16W				< IC >	
R254	1-216-821-11	METAL CHIP 1K 5% 1/16W			IC4601	8-759-485-79 IC TC7SET08FU(TE85R)	
R255	1-216-821-11	METAL CHIP 1K 5% 1/16W				< COIL >	
R256	1-216-821-11	METAL CHIP 1K 5% 1/16W		L4601	1-412-031-11	INDUCTOR CHIP 47uH	
R257	1-216-821-11	METAL CHIP 1K 5% 1/16W		L4602	1-469-525-91	INDUCTOR 10uH	
R258	1-216-821-11	METAL CHIP 1K 5% 1/16W				< FLUORESCENT INDICATOR >	
R259	1-216-029-00	METAL CHIP 150 5% 1/10W		△ ND4601	1-517-933-11	FLUORESCENT TUBE (0.44)	
		< SWITCH >				< TRANSISTOR >	
S251	1-771-331-21	SWITCH, PUSH (1 KEY) (EJECT)		Q4601	8-729-039-24	TRANSISTOR FX216-TL1	
		FP-249 MOUNT (Not supplied) ***** (Ref.No.;1000 Series)				< RESISTOR >	
	3-965-552-01	HOLDER (T), SENSOR		R4601	1-216-808-11	METAL CHIP 82 5% 1/16W	
		< HOLE ELEMENT >		R4604	1-216-853-11	METAL CHIP 470K 5% 1/16W	
H001	8-719-061-28	DIODE HW-105C-FT-V (S REEL)				< TRANSFORMER >	
H002	8-719-061-28	DIODE HW-105C-FT-V (T REEL)		△ T4601	1-435-225-21	TRANSFORMER, INVERTER	
		< TRANSISTOR >					
Q001	8-729-907-25	PHOTO TRANISTOR PT4850F (TAPE TOP)					
		< SWITCH >					
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP,ME/MP,REC PROOF)					

Note :

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MA-374

MA-375

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
A-7074-153-A	MA-374 BOARD, COMPLETE (TR317/TR517)	***** (Ref.No.;1000 Series)		R310	1-216-864-11	METAL CHIP 0	5% 1/16W
	< CAPACITOR >			R312	1-216-824-11	METAL CHIP 1.8K	5% 1/16W
C322	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V	R313	1-216-864-11	METAL CHIP 0	5% 1/16W
C325	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V	R322	1-216-864-11	METAL CHIP 0	5% 1/16W
C330	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	R323	1-216-864-11	METAL CHIP 0	5% 1/16W
C333	1-110-563-11	CERAMIC CHIP 0.068uF	10% 16V	R327	1-216-864-11	METAL CHIP 0	5% 1/16W
C336	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V	R328	1-216-817-11	METAL CHIP 470	5% 1/16W
C341	1-109-982-11	CERAMIC CHIP 1uF	10% 10V	R332	1-216-841-11	METAL CHIP 47K	5% 1/16W
C342	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	R333	1-216-841-11	METAL CHIP 47K	5% 1/16W
C353	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	R335	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
C354	1-104-851-11	TANTAL. CHIP 10uF	20% 4V	R340	1-216-830-11	METAL CHIP 5.6K	5% 1/16W
C356	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V	R341	1-216-834-11	METAL CHIP 12K	5% 1/16W
C357	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V	R344	1-216-834-11	METAL CHIP 12K	5% 1/16W
C358	1-115-467-11	CERAMIC CHIP 0.22uF	10% 10V	R345	1-216-831-11	METAL CHIP 6.8K	5% 1/16W
C359	1-109-982-11	CERAMIC CHIP 1uF	10% 10V	R346	1-216-838-11	METAL CHIP 27K	5% 1/16W
C360	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	R347	1-216-838-11	METAL CHIP 27K	5% 1/16W
	< CONNECTOR >			R348	1-216-837-11	METAL CHIP 22K	5% 1/16W
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P		R349	1-216-837-11	METAL CHIP 22K	5% 1/16W
CN303	1-779-334-11	CONNECTOR, FFC/FPC 20P		R358	1-216-803-11	METAL CHIP 33	5% 1/16W
	< DIODE >			S302	1-771-331-51	SWITCH, PUSH (1 KEY) (VTR/PLAYER)	
D302	8-719-060-65	DIODE DAC3810		S303	1-771-331-71	SWITCH, PUSH (1 KEY) (CAMERA)	
D303	8-719-067-44	DIODE CL-310IRS-X-TU					
D304	8-719-061-82	DIODE TLSU1002(TPX1,SONY)		A-7074-127-A	MA-375 BOARD, COMPLETE (TRV87/TRV87P)	*****	
D305	8-719-073-01	DIODE MA111-TX		A-7074-121-A	MA-375 BOARD, COMPLETE	(TRV57/TRV57P/TRV67)	
D323	8-719-073-01	DIODE MA111-TX				*****	
	< FUSE >			A-7074-228-A	MA-375 BOARD, COMPLETE (TRV17/TRV37)	*****	
△ F301	1-533-874-11	FUSE, MICRO (0.2A)		A-7074-191-A	MA-375 BOARD, COMPLETE (TRV47)	*****	
	< IC >					(Ref.No.;1000 Series)	
IC322	8-759-339-63	IC NJM2118V-TE2			< CAPACITOR >		
	< JACK >			C301	1-107-686-11	TANTAL. CHIP 4.7uF	20% 16V
J321	1-568-027-11	JACK, SMALL TYPE (MIC)					(TRV87/TRV87P)
	< COIL >			C302	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
L301	1-216-295-91	SHORT 0 (Note)					(TRV87/TRV87P)
	< TRANSISTOR >			C303	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
Q301	8-729-402-42	TRANSISTOR UN5213-TX					(TRV87/TRV87P)
Q302	8-729-422-51	TRANSISTOR UN5110-QRS-TX		C304	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
Q304	8-729-920-85	TRANSISTOR 2SD1664-T100-QR					(TRV87/TRV87P)
Q321	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX		C305	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
Q322	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX					(TRV87/TRV87P)
	< RESISTOR >			C322	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
R304	1-216-864-11	METAL CHIP 0	5% 1/16W				(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)
R305	1-216-817-11	METAL CHIP 470	5% 1/16W	C323	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
R307	1-216-815-11	METAL CHIP 330	5% 1/16W				(TRV87/TRV87P)
R308	1-216-309-00	METAL CHIP 5.6	5% 1/10W	C325	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
R309	1-216-302-00	METAL CHIP 2.7	5% 1/10W				(TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)
				C326	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
							(TRV87/TRV87P)
				C327	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V
							(TRV87/TRV87P)

Note : Resistor is mounted to the location where L301 is printed.

Note :
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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C328	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V (TRV87/TRV87P)	C358	1-115-467-11	CERAMIC CHIP 0.22uF	10% 10V
C329	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV87/TRV87P)	C359	1-109-982-11	CERAMIC CHIP 1uF	10% 10V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)
C330	1-162-927-11	CERAMIC CHIP 100PF	5% 50V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	C360	1-162-927-11	CERAMIC CHIP 100PF	5% 50V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)
C331	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V (TRV87/TRV87P)	C362	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V (TRV87/TRV87P)
C332	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V (TRV87/TRV87P)	C363	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V (TRV87/TRV87P)
C333	1-110-563-11	CERAMIC CHIP 0.068uF	10% 16V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	C364	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V (TRV87/TRV87P)
C334	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV87/TRV87P)	< CONNECTOR >			
C335	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV87/TRV87P)	* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
C336	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	* CN302	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P (TRV87/TRV87P)	
C337	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV87/TRV87P)	CN303	1-779-334-11	CONNECTOR, FFC/FPC 20P	
C338	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV87/TRV87P)	< DIODE >			
C339	1-110-563-11	CERAMIC CHIP 0.068uF	10% 16V (TRV87/TRV87P)	D301	8-719-078-23	DIODE DCR2815 (TRV87/TRV87P)	
C340	1-110-563-11	CERAMIC CHIP 0.068uF	10% 16V (TRV87/TRV87P)	D302	8-719-060-65	DIODE DAC3810	
C341	1-109-982-11	CERAMIC CHIP 1uF	10% 10V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	D303	8-719-067-44	DIODE CL-310IRS-X-TU (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
C342	1-162-927-11	CERAMIC CHIP 100PF	5% 50V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	D304	8-719-061-82	DIODE TLSU1002(TPX1,SONY)	
C343	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V (TRV87/TRV87P)	D305	8-719-073-01	DIODE MA111-TX	
C344	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V (TRV87/TRV87P)	D322	8-719-073-03	DIODE MA8082-(K8).S0 (TRV87/TRV87P)	
C345	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V (TRV87/TRV87P)	D323	8-719-073-01	DIODE MA111-TX	
C346	1-164-245-11	CERAMIC CHIP 0.015uF	10% 25V (TRV87/TRV87P)	< FUSE >			
C347	1-164-245-11	CERAMIC CHIP 0.015uF	10% 25V (TRV87/TRV87P)	△F301	1-533-874-11	FUSE, MICRO (0.2A)	
C348	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V (TRV87/TRV87P)	< IC >			
C349	1-162-969-11	CERAMIC CHIP 0.0068uF	10% 25V (TRV87/TRV87P)	IC301	8-749-012-83	IC PNA4S13M01S0 (TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
C350	1-162-969-11	CERAMIC CHIP 0.0068uF	10% 25V (TRV87/TRV87P)	IC321	8-759-643-77	IC BH7870KV-E2 (TRV87/TRV87P)	
C351	1-162-969-11	CERAMIC CHIP 0.0068uF	10% 25V (TRV87/TRV87P)	IC322	8-759-339-63	IC NJM2118V-TE2 (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
C352	1-162-969-11	CERAMIC CHIP 0.0068uF	10% 25V (TRV87/TRV87P)	< JACK >			
C353	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	J321	1-568-027-11	JACK, SMALL TYPE (MIC) (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
C354	1-104-851-11	TANTAL. CHIP 10uF	20% 4V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	J321	1-691-737-11	JACK SMALL TYPE (MIC) (TRV87/TRV87P)	
C355	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV87/TRV87P)	< COIL >			
C356	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	L301	1-414-754-11	INDUCTOR 10uH (TRV87/TRV87P)	
C357	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V	L301	1-216-295-91	SHORT 0 (Note) (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
				< TRANSISTOR >			
				Q301	8-729-402-42	TRANSISTOR UN5213-TX (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
				Q302	8-729-422-51	TRANSISTOR UN5110-QRS-TX (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
				Q302	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX (TRV87/TRV87P)	
				Q303	8-729-026-48	TRANSISTOR 2SA1037AK-T146-Q (TRV87/TRV87P)	
				Q304	8-729-920-85	TRANSISTOR 2SD1664-T100-QR	

Note : Resistor is mounted to the location where L301 is printed.

Note :
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note :
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MA-375

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
Q321	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R337	1-216-831-11	METAL CHIP 6.8K 5% 1/16W (TRV87/TRV87P)	
Q322	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R338	1-216-821-11	METAL CHIP 1K 5% 1/16W (TRV87/TRV87P)	
		< RESISTOR >		R339	1-216-821-11	METAL CHIP 1K 5% 1/16W (TRV87/TRV87P)	
R301	1-216-823-11	METAL CHIP 1.5K 5% 1/16W (TRV87/TRV87P)		R340	1-216-830-11	METAL CHIP 5.6K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
R302	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)		R341	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R303	1-216-810-11	METAL CHIP 120 5% 1/16W (TRV87/TRV87P)		R342	1-216-830-11	METAL CHIP 5.6K 5% 1/16W (TRV87/TRV87P)	
R304	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R343	1-216-830-11	METAL CHIP 5.6K 5% 1/16W (TRV87/TRV87P)	
R305	1-216-817-11	METAL CHIP 470 5% 1/16W		R344	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R306	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)		R345	1-216-831-11	METAL CHIP 6.8K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
R307	1-216-815-11	METAL CHIP 330 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R346	1-216-838-11	METAL CHIP 27K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
R308	1-216-309-00	METAL CHIP 5.6 5% 1/10W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R347	1-216-838-11	METAL CHIP 27K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
R308	1-216-311-00	METAL CHIP 6.8 5% 1/10W (TRV87/TRV87P)		R348	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R309	1-216-302-00	METAL CHIP 2.7 5% 1/10W		R349	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R310	1-216-864-11	METAL CHIP 0 5% 1/16W		R350	1-216-836-11	METAL CHIP 18K 5% 1/16W (TRV87/TRV87P)	
R312	1-216-824-11	METAL CHIP 1.8K 5% 1/16W		R351	1-216-836-11	METAL CHIP 18K 5% 1/16W (TRV87/TRV87P)	
R313	1-216-864-11	METAL CHIP 0 5% 1/16W		R352	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)	
R314	1-216-837-11	METAL CHIP 22K 5% 1/16W (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)		R353	1-216-831-11	METAL CHIP 6.8K 5% 1/16W (TRV87/TRV87P)	
R315	1-216-847-11	METAL CHIP 150K 5% 1/16W (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)		R354	1-216-831-11	METAL CHIP 6.8K 5% 1/16W (TRV87/TRV87P)	
R321	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)		R355	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)	
R322	1-216-864-11	METAL CHIP 0 5% 1/16W		R356	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV87/TRV87P)	
R323	1-216-864-11	METAL CHIP 0 5% 1/16W		R357	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV87/TRV87P)	
R324	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)		R358	1-216-803-11	METAL CHIP 33 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
R325	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV87/TRV87P)		R359	1-216-832-11	METAL CHIP 8.2K 5% 1/16W (TRV87/TRV87P)	
R326	1-216-836-11	METAL CHIP 18K 5% 1/16W (TRV87/TRV87P)		R360	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV87/TRV87P)	
R327	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R361	1-216-836-11	METAL CHIP 18K 5% 1/16W (TRV87/TRV87P)	
R328	1-216-817-11	METAL CHIP 470 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R362	1-216-818-11	METAL CHIP 560 5% 1/16W (TRV87/TRV87P)	
R329	1-216-833-91	RES-CHIP 10K 5% 1/16W (TRV87/TRV87P)		R363	1-216-833-91	RES-CHIP 10K 5% 1/16W (TRV87/TRV87P)	
R331	1-216-825-11	METAL CHIP 2.2K 5% 1/16W (TRV87/TRV87P)		R364	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)	
R332	1-216-841-11	METAL CHIP 47K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		R365	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV87/TRV87P)	
R333	1-216-841-11	METAL CHIP 47K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)				< SWITCH >	
R334	1-216-831-11	METAL CHIP 6.8K 5% 1/16W (TRV87/TRV87P)		S301	1-692-605-11	SWITCH, SLIDE (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
R335	1-216-829-11	METAL CHIP 4.7K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		S302	1-771-331-51	SWITCH, PUSH (1 KEY)(VTR/PLAYER)	
R336	1-216-825-11	METAL CHIP 2.2K 5% 1/16W (TRV87/TRV87P)		S303	1-771-331-71	SWITCH, PUSH (1 KEY)(CAMERA)	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-7074-229-A	PD-117 BOARD, COMPLETE (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P) ***** (Ref.No.:10000 Series)		CN5705	1-794-050-21	CONNECTOR, FFC/FPC (ZIF) 26P	
		< CAPACITOR >				< DIODE >	
C5501	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V	D5502	8-713-102-80	DIODE 1T369-01-T8A	
C5503	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	D5503	8-719-073-01	DIODE MA111-(K8).SO	
C5504	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	D5601	8-719-073-01	DIODE MA111-(K8).SO	
C5505	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D5602	8-719-062-44	DIODE PG1112H-TR	
C5506	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V			< FERRITE BEAD >	
C5507	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB5502	1-500-329-11	INDUCTOR CHIP 0UH	
C5508	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	FB5503	1-500-329-11	INDUCTOR CHIP 0UH	
C5509	1-107-687-11	TANTAL. CHIP	3.3uF 20% 20V			< IC >	
C5510	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	IC5501	8-759-591-94	IC RB5P0030M1	
C5511	1-164-739-11	CERAMIC CHIP	560PF 5% 50V	IC5502	8-759-594-11	IC LZ9FF404	
C5512	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	IC5503	8-759-478-92	IC TC7SET04FU(TE85R)	
C5513	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	IC5601	8-759-564-49	IC TC7W53FU(TE12R)	
C5514	1-119-750-11	TANTAL. CHIP	22uF 20% 6.3V	IC5602	8-759-075-70	IC TA75S393F-TE85R (STARTER)	
C5515	1-164-357-11	CERAMIC CHIP	1000PF 5% 50V	IC5701	8-759-573-02	IC BU9735K-E2	
C5516	1-162-927-11	CERAMIC CHIP	100PF 5% 50V			< COIL >	
C5517	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	L5501	1-469-525-91	INDUCTOR 10uH	
C5518	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	L5504	1-469-525-91	INDUCTOR 10uH	
C5519	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	L5505	1-412-956-21	INDUCTOR 27uH	
C5520	1-113-994-11	TANTAL. CHIP	6.8uF 20% 16V	L5601	1-419-387-21	INDUCTOR 100uH	
C5521	1-107-682-11	CERAMIC CHIP	1uF 1 16V			< TRANSISTOR >	
C5522	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	Q5501	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
C5523	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	Q5502	8-729-041-23	TRANSISTOR MGSF1P02LT1	
C5524	1-107-682-11	CERAMIC CHIP	1uF 10% 16V	Q5503	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
C5527	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	Q5504	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
C5528	1-135-177-21	TANTALUM CHIP	1uF 20% 20V	Q5505	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
C5529	1-107-725-11	CERAMIC CHIP	0.1uF 10% 16V	Q5506	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
C5530	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	Q5601	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
C5531	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	Q5602	8-729-039-43	TRANSISTOR FP216-TL	
C5602	1-125-822-11	TANTAL CHIP	10uF 10% 10V	Q5603	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
C5603	1-109-982-11	CERAMIC CHIP	1uF 10% 10V	Q5604	8-729-042-58	TRANSISTOR RN2102F(TPL3)	
C5604	1-164-657-11	CERAMIC CHIP	0.015uF 10% 50V			< RESISTOR >	
C5605	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R5501	1-216-853-11	METAL CHIP 470K 5% 1/16W	
C5606	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R5503	1-218-895-11	METAL CHIP 100K 0.5% 1/16W	
△ C5607	1-131-959-91	CERAMIC CHIP	12PF 10% 3KV	R5504	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C5608	1-125-822-11	TANTAL. CHIP	10uF 20% 10V	R5505	1-216-835-11	METAL CHIP 15K 5% 1/16W	
C5704	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R5506	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
		< CONNECTOR >		R5507	1-216-841-11	METAL CHIP 47K 5% 1/16W	
CN5501	1-573-364-11	CONNECTOR, FFC/FPC 24P		R5508	1-216-843-11	METAL CHIP 68K 5% 1/16W	
CN5501	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P		R5509	1-216-837-11	METAL CHIP 22K 5% 1/16W	
* CN5502	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P		R5510	1-216-843-11	METAL CHIP 68K 5% 1/16W	
CN5604	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P		R5511	1-216-857-11	METAL CHIP 1M 5% 1/16W	
CN5701	1-779-893-11	PIN, CONNECTOR (PC BOARD) 8P		R5512	1-216-845-11	METAL CHIP 100K 5% 1/16W	
CN5702	1-779-064-11	PIN, CONNECTOR (PC BOARD) 12P		R5513	1-216-857-11	METAL CHIP 1M 5% 1/16W	
CN5703	1-573-346-21	CONNECTOR, FFC/FPC 6P		R5515	1-216-864-11	METAL CHIP 0 5% 1/16W	
CN5703	1-691-344-11	CONNECTOR, FFC/FPC (ZIF) 6P		R5516	1-216-833-91	RES-CHIP 10K 5% 1/16W	
* CN5703	1-778-154-21	CONNECTOR, FFC/FPC (ZIF) 6P		R5519	1-216-864-11	METAL CHIP 0 5% 1/16W	
CN5704	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P					

<p>Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.</p>	<p>Note : Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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PD-117

PJ-99

PJ-100

Ref. No.	Part No.	Description	Remarks
R5520	1-216-864-11	METAL CHIP 0 5%	1/16W
R5521	1-216-864-11	METAL CHIP 0 5%	1/16W
R5523	1-216-809-11	METAL CHIP 100 5%	1/16W
R5524	1-216-809-11	METAL CHIP 100 5%	1/16W
R5525	1-216-809-11	METAL CHIP 100 5%	1/16W
R5551	1-216-841-11	METAL CHIP 47K 5%	1/16W
R5553	1-216-821-11	METAL CHIP 1K 5%	1/16W
R5557	1-216-864-11	METAL CHIP 0 5%	1/16W
R5560	1-216-853-11	METAL CHIP 470K 5%	1/16W
R5562	1-216-833-91	RES-CHIP 10K 5%	1/16W
R5563	1-216-841-11	METAL CHIP 47K 5%	1/16W
R5564	1-216-857-11	METAL CHIP 1M 5%	1/16W
R5565	1-216-857-11	METAL CHIP 1M 5%	1/16W
R5569	1-216-848-11	METAL CHIP 180K 5%	1/16W
R5608	1-216-864-11	METAL CHIP 0 5%	1/16W
R5609	1-216-833-91	RES-CHIP 10K 5%	1/16W
R5610	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R5611	1-216-845-11	METAL CHIP 100K 5%	1/16W
R5612	1-216-834-11	METAL CHIP 12K 5%	1/16W
R5613	1-216-055-00	METAL CHIP 1.8K 5%	1/10W
R5614	1-216-833-91	RES-CHIP 10K 5%	1/16W
R5616	1-216-810-11	METAL CHIP 120 5%	1/16W
R5617	1-216-837-11	METAL CHIP 22K 5%	1/16W
R5618	1-216-817-11	METAL CHIP 470 5%	1/16W
R5702	1-216-822-11	METAL CHIP 1.2K 5%	1/16W
R5704	1-216-823-11	METAL CHIP 1.5K 5%	1/16W
R5706	1-216-825-11	METAL CHIP 2.2K 5%	1/16W
R5707	1-216-828-11	METAL CHIP 3.9K 5%	1/16W
R5708	1-216-832-11	METAL CHIP 8.2K 5%	1/16W
R5711	1-216-809-11	METAL CHIP 100 5%	1/16W
R5712	1-216-855-11	METAL CHIP 680K 5%	1/16W
R5714	1-216-809-11	METAL CHIP 100 5%	1/16W
< SWITCH >			
S5701	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT +)	
S5702	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT -)	
S5703	1-692-088-41	SWITCH, TACTILE (VOLUME +)	
S5704	1-692-088-41	SWITCH, TACTILE (VOLUME -)	
< TRANSFORMER >			
△ T5601	1-435-226-11	TRANSFORMER, INVERTER	
A-7074-158-A PJ-99 BOARD, COMPLETE(TR317/TR517) ***** (Ref.No.;1000 Series)			
< CAPACITOR >			
C101	1-110-569-11	TANTAL. CHIP 47uF 20% 6.3V	
C103	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
< CONNECTOR >			
CN101	1-779-330-21	CONNECTOR, FFC/FPC 12P	
< DIODE >			
D101	8-719-062-16	DIODE 01ZA8.2(TPL3)	
D105	8-719-988-61	DIODE 1SS355TE-17	

Ref. No.	Part No.	Description	Remarks
< JACK >			
J101	1-537-747-41	TERMINAL BOARD	
< COIL >			
L101	1-216-295-91	SHORT 0 (Note)	
L102	1-412-963-11	INDUCTOR 100uH	
< TRANSISTOR >			
Q101	8-729-101-07	TRANSISTOR 2SB798-T1-DLDK	
Q102	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
< RESISTOR >			
R102	1-216-138-00	METAL CHIP 3.3 5% 1/8W	
R103	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R104	1-216-820-11	METAL CHIP 820 5% 1/16W	
R105	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R109	1-216-821-11	METAL CHIP 1K 5% 1/16W	
< VARISTOR >			
VDR101	1-801-862-11	VARISTOR, CHIP	
VDR102	1-801-862-11	VARISTOR, CHIP	
A-7074-122-A PJ-100 BOARD, COMPLETE (TRV67) *****			
A-7074-128-A PJ-100 BOARD, COMPLETE (TRV87/TRV87P) *****			
A-7074-115-A PJ-100 BOARD, COMPLETE (TRV17/TRV37/TRV47/TRV57/TRV57P) ***** (Ref.No.;1000 Series)			
< CAPACITOR >			
C101	1-110-569-11	TANTAL. CHIP 47uF 20% 6.3V	
C103	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V (TRV17/TRV37/TRV47/TRV57/TRV57P)	
< CONNECTOR >			
CN101	1-779-330-21	CONNECTOR, FFC/FPC 12P	
< DIODE >			
D101	8-719-045-87	DIODE MA4Z082WA-(K8).SO (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
D102	8-719-073-03	DIODE MA8082-(K8).SO (TRV67/TRV87/TRV87P)	
D103	8-719-062-16	DIODE 01ZA8.2(TPL3) (TRV67/TRV87/TRV87P)	
D103	8-719-045-87	DIODE MA4Z082WA-(K8).SO (TRV67/TRV87/TRV87P)	
D104	8-719-062-16	DIODE 01ZA8.2(TPL3) (TRV67/TRV87/TRV87P)	
D104	8-719-045-87	DIODE MA4Z082WA-(K8).SO (TRV67/TRV87/TRV87P)	
D105	8-719-988-61	DIODE 1SS355TE-17	

Note : Resistor is mounted to the location where L101 is printed.

Note :
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note :
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
		< JACK >	
J101	1-537-747-41	TERMINAL BOARD (TRV17/TRV37/TRV47/TRV57/TRV57P)	
J101	1-537-747-21	TERMINAL BOARD (TRV87/TRV87P)	
J101	1-694-643-11	TERMINAL BOARD (TRV67)	
		< COIL >	
L101	1-216-295-91	SHORT	0 (Note)
L102	1-216-295-91	SHORT	0 (Note) (TRV67/TRV87/TRV87P)
L102	1-412-963-11	INDUCTOR	100uH (TRV17/TRV37/TRV47/TRV57/TRV57P)
L103	1-216-295-91	SHORT	0 (Note) (TRV87/TRV87P)
L104	1-216-295-91	SHORT	0 (Note) (TRV87/TRV87P)
		< TRANSISTOR >	
Q101	8-729-101-07	TRANSISTOR	2SB798-T1-DLDK
Q102	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO
		< RESISTOR >	
R102	1-216-138-00	METAL CHIP	3.3 5% 1/8W
R103	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
R104	1-216-820-11	METAL CHIP	820 5% 1/16W
R105	1-216-836-11	METAL CHIP	18K 5% 1/16W
R108	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV67/TRV87/TRV87P)
R109	1-216-821-11	METAL CHIP	1K 5% 1/16W
		< VARISTOR >	
VDR101	1-801-862-11	VARISTOR, CHIP	
VDR102	1-801-862-11	VARISTOR, CHIP	(TRV87/TRV87P)
A-7074-123-A	SE-101 BOARD, COMPLETE		(TRV57/TRV57P/TRV67) *****
A-7074-129-A	SE-101 BOARD, COMPLETE		(TRV87/TRV87P) *****
A-7074-116-A	SE-101 BOARD, COMPLETE		(TRV17/TRV37/TRV47) ***** (Ref.No.;1000 Series)
		< CAPACITOR >	
C451	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C452	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C453	1-104-847-11	TANTAL. CHIP	22uF 20% 4V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C454	1-104-847-11	TANTAL. CHIP	22uF 20% 4V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C455	1-164-343-11	CERAMIC CHIP	0.056uF 10% 25V (TRV57/TRV57P/TRV67/TRV87/TRV87P)

Ref. No.	Part No.	Description	Remarks
C456	1-164-343-11	CERAMIC CHIP	0.056uF 10% 25V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C457	1-164-343-11	CERAMIC CHIP	0.056uF 10% 25V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C458	1-110-666-11	ELECT CHIP	22uF 20% 6.3V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C459	1-164-343-11	CERAMIC CHIP	0.056uF 10% 25V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C460	1-110-666-11	ELECT CHIP	22uF 20% 6.3V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C462	1-110-501-11	CERAMIC CHIP	0.33uF 10% 16V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C463	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
C464	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V (TRV57/TRV57P/TRV67/TRV87/TRV87P)
		< CONNECTOR >	
CN451	1-691-348-11	CONNECTOR, FFC/FPC (ZIF) 10P	
		< IC >	
IC451	8-759-489-19	IC	uPC6756GR-8JG-E2 (TRV57/TRV57P/TRV67/TRV87/TRV87P)
		< JACK >	
J451	1-695-514-11	JACK (SMALL TYPE) 1P (HEADPHONE MONO)	(TRV17/TRV37/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)
J451	1-695-514-21	JACK (SMALL TYPE) 1P(HEADPHONE,STEREO)	(TRV87/TRV87P)
		< COIL >	
L451	1-414-754-11	INDUCTOR	10uH (TRV57/TRV57P/TRV67/TRV87/TRV87P)
L452	1-216-295-91	SHORT	0 (Note)(TRV87/TRV87P)
L453	1-216-295-91	SHORT	0 (Note)
		< RESISTOR >	
R451	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R452	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R453	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R454	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R455	1-216-857-11	METAL CHIP	1M 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R456	1-216-833-91	RES-CHIP	10K 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R457	1-216-833-91	RES-CHIP	10K 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R458	1-216-857-11	METAL CHIP	1M 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R460	1-216-835-11	METAL CHIP	15K 5% 1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)
R461	1-216-864-11	METAL CHIP	0 5% 1/16W

Note : Resistors are mounted to the location where L101,L102, L103, L104 are printed.

Note : Resistors are mounted to the location where L452,L453 are printed.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< SENSOR >					
SE451	1-418-252-11	SENSOR, ANGULAR VELOCITY (TRV57/TRV57P/TRV67/TRV87/TRV87P)		C137	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V
SE452	1-418-252-21	SENSOR, ANGULAR VELOCITY (TRV57/TRV57P/TRV67/TRV87/TRV87P)		C138	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
		< VARISTOR >		C139	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
VDR451	1-801-862-11	VARISTOR, CHIP (TRV87/TRV87P)		C141	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
VDR452	1-801-862-11	VARISTOR, CHIP		C142	1-117-863-11	CERAMIC CHIP 0.47uF	10% 6.3V
				C146	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
				C202	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V
				C202	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
				C203	1-164-156-11	CERAMIC CHIP 0.1uF	25V
				C206	1-164-392-11	CERAMIC CHIP 390PF	5% 50V
				C207	1-119-750-11	TANTAL. CHIP 22uF	20% 6.3V
A-7094-702-A	VC-234 BOARD, COMPLETE (SERVICE)(TR317)	*****		C210	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
A-7094-703-A	VC-234 BOARD, COMPLETE (SERVICE)(TR517)	*****		C211	1-119-660-11	TANTAL. CHIP 4.7uF	20% 6.3V
A-7094-728-A	VC-234 BOARD, COMPLETE(SERVICE) (TRV17/TRV37)	*****		C211	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
A-7094-714-A	VC-234 BOARD, COMPLETE (SERVICE)(TRV47)	*****		C212	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
A-7094-711-A	VC-234 BOARD, COMPLETE (SERVICE) (TRV87/TRV87P)	*****		C213	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
A-7094-712-A	VC-234 BOARD, COMPLETE (SERVICE)(TRV67)	*****		C216	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
A-7094-713-A	VC-234 BOARD, COMPLETE (SERVICE) (TRV57/TRV57P)	*****		C217	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
		(Ref.No.:1000 Series)		C218	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
		< CAPACITOR >		C219	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C101	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C220	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C102	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C221	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C103	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C222	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C105	1-104-752-11	TANTAL. CHIP 33uF	20% 6.3V	C223	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C105	1-119-661-11	TANTAL. CHIP 33uF	20% 6.3V	C224	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C106	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C225	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C107	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C226	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C108	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C227	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C109	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C228	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C110	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C231	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C111	1-164-217-11	CERAMIC CHIP 150PF	5% 50V	C232	1-107-823-11	CERAMIC CHIP 0.47uF	10% 16V
C112	1-162-926-11	CERAMIC CHIP 82PF	5% 50V	C233	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
C113	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V	C234	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C114	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V	C236	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C115	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C237	1-162-965-11	CERAMIC CHIP 0.0015uF	10% 50V
C116	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C239	1-104-851-11	TANTAL. CHIP 10uF	20% 4V
C117	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C239	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C118	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C240	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C119	1-104-851-11	TANTAL. CHIP 10uF	20% 10V	C241	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C119	1-125-822-11	TANTALUM 10uF	20% 10V	C243	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C121	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C244	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
C123	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C245	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
C125	1-164-156-11	CERAMIC CHIP 0.1uF	25V	C246	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C128	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C247	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C130	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C249	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
C131	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C250	1-162-916-11	CERAMIC CHIP 12PF	5% 50V
C133	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V			(TR317/TR517/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
C134	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C253	1-107-826-91	CERAMIC CHIP 0.1uF	10% 16V
C135	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C254	1-127-688-21	TANTAL. CHIP 10uF	20% 6.3V
C136	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V			(TRV87/TRV87P)	
				C255	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
						(TRV87/TRV87P)	
				C256	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
				C257	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
						(TRV87/TRV87P)	
				C258	1-125-837-91	CERAMIC CHIP 1uF	10% 6.3V
						(TRV87/TRV87P)	
				C259	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
				C260	1-104-851-11	TANTAL. CHIP 10uF	20% 4V
				C262	1-109-982-11	CERAMIC CHIP 1uF	10% 10V

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C263	1-104-851-11	TANTAL. CHIP	10uF 20% 4V	C518	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V
C264	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	C519	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V
C265	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	C520	1-162-962-11	CERAMIC CHIP	470PF 10% 50V
C266	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	C521	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V
C291	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C522	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V
C292	1-119-750-11	TANTAL. CHIP	22uF 20% 6.3V	C523	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V
C293	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	C524	1-104-847-11	TANTAL. CHIP	22uF 20% 4V
C401	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C525	1-115-156-11	CERAMIC CHIP	1uF 10V
C402	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V			(TR317/TR517/TRV17/TRV37/TRV47)	
C403	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C526	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V
C404	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V			(TR317/TR517/TRV17/TRV37/TRV47)	
C405	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	C527	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V
C406	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	C552	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C407	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V	C554	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V
C408	1-119-660-11	TANTAL. CHIP	4.7uF 20% 6.3V	C556	1-125-822-11	TANTAL. CHIP	10uF 20% 10V
C409	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C559	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V
C410	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C560	1-162-962-11	CERAMIC CHIP	470PF 10% 50V
C411	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C561	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C412	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C562	1-164-489-11	CERAMIC CHIP	0.22uF 10% 16V
C413	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C563	1-119-661-11	TANTAL. CHIP	33uF 20% 6.3V
C414	1-162-960-11	CERAMIC CHIP	220PF 10% 50V	C564	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C415	1-162-968-11	CERAMIC CHIP	0.0047uF 10% 50V	C565	1-107-823-11	CERAMIC CHIP	0.47uF 10% 16V
C416	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C566	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C417	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C568	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V
C418	1-162-962-11	CERAMIC CHIP	470PF 10% 50V	C569	1-115-156-11	CERAMIC CHIP	1uF 10V
C419	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C570	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C420	1-109-982-11	CERAMIC CHIP	1uF 10% 10V	C571	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V
C421	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C572	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V
C424	1-164-360-11	CERAMIC CHIP	0.1uF 16V	C573	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V
C425	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	C641	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V
C427	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	C644	1-127-760-91	CERAMIC CHIP	4.7uF 10% 6.3V
C428	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V	C645	1-135-149-21	TANTALUM CHIP	2.2uF 20% 10V
C429	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V	C646	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V
C430	1-164-505-11	CERAMIC CHIP	2.2uF 16V	C647	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C431	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V			(TRV87/TRV87P)	
C433	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C648	1-164-677-11	CERAMIC CHIP	0.033uF 10% 16V
C434	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C649	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V
C435	1-164-315-11	CERAMIC CHIP	470PF 50V	C650	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C436	1-164-315-11	CERAMIC CHIP	470PF 50V			(TRV67/TRV87/TRV87P)	
C501	1-162-919-11	CERAMIC CHIP	22PF 5% 50V	C651	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V
C502	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C652	1-135-149-21	TANTALUM CHIP	2.2uF 20% 10V
C503	1-162-919-11	CERAMIC CHIP	22PF 5% 50V			(TRV67/TRV87/TRV87P)	
C504	1-115-156-11	CERAMIC CHIP	1uF 0% 10V	C653	1-135-149-21	TANTALUM CHIP	2.2uF 20% 10V
C505	1-115-156-11	CERAMIC CHIP	1uF 0% 10V	C654	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C506	1-135-214-21	TANTAL. CHIP	4.7uF 20% 20V	C655	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V
C507	1-104-851-11	TANTAL. CHIP	10uF 20% 4V	C656	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
C508	1-115-156-11	CERAMIC CHIP	1uF 0% 10V	C657	1-110-501-11	CERAMIC CHIP	0.33uF 10% 16V
C509	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V			(TRV87/TRV87P)	
C511	1-104-329-11	CERAMIC CHIP	0.1uF 10% 50V	C658	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C512	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V	C659	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V
C513	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V			(TRV87/TRV87P)	
C514	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C660	1-164-217-11	CERAMIC CHIP	150PF 5% 50V
C515	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V			(TRV87/TRV87P)	
C516	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C661	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C517	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V			(TRV87/TRV87P)	
				C663	1-162-927-11	CERAMIC CHIP	100PF 5% 50V
						(TRV87/TRV87P)	
				C664	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
						(TRV87/TRV87P)	
				C665	1-162-919-11	CERAMIC CHIP	22PF 5% 50V
						(TRV87/TRV87P)	
				C667	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V

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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C668	1-135-149-21	TANTALUM CHIP	2.2uF 20% 10V	C738	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V
C669	1-135-149-21	TANTALUM CHIP	2.2uF 20% 10V (TRV67/TRV87/TRV87P)	C739	1-162-964-11	CERAMIC CHIP	0.001uF 10% 50V (TRV87/TRV87P)
C671	1-126-246-11	ELECT CHIP	220uF 20% 4V	C740	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C672	1-126-246-11	ELECT CHIP	220uF 20% 4V (TRV67/TRV87/TRV87P)	C741	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C673	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV67/TRV87/TRV87P)	C742	1-117-863-11	CERAMIC CHIP	0.47uF 10% 6.3V
C701	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V	C743	1-117-863-11	CERAMIC CHIP	0.47uF 10% 6.3V (TRV87/TRV87P)
C702	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V	C744	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V
C705	1-104-847-11	TANTAL. CHIP	22uF 20% 4V	C745	1-162-925-11	CERAMIC CHIP	68PF 5% 50V
C706	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V	C746	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
C707	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	C747	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
C708	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V	C751	1-104-851-11	TANTAL. CHIP	10uF 20% 4V (TRV87/TRV87P)
C709	1-110-569-11	TANTAL. CHIP	47uF 20% 4V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	C752	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V (TRV87/TRV87P)
C710	1-110-569-11	TANTAL. CHIP	47uF 20% 4V (TRV87/TRV87P)	C753	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV87/TRV87P)
C711	1-104-851-11	TANTAL. CHIP	10uF 20% 4V	C754	1-117-863-11	CERAMIC CHIP	0.47uF 10% 6.3V (TRV87/TRV87P)
C712	1-104-851-11	TANTAL. CHIP	10uF 20% 4V (TRV87/TRV87P)	C755	1-117-863-11	CERAMIC CHIP	0.47uF 10% 6.3V (TRV87/TRV87P)
C713	1-107-823-11	CERAMIC CHIP	0.47uF 10% 16V	C756	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V (TRV87/TRV87P)
C714	1-119-661-11	TANTAL. CHIP	33uF 20% 6.3V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	C757	1-135-177-21	TANTALUM CHIP	1uF 20% 20V (TRV87/TRV87P)
C715	1-135-180-21	TANTALUM CHIP	3.3uF 20% 6.3V	C758	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)
C716	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	C759	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV87/TRV87P)
C717	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV87/TRV87P)	C760	1-119-660-11	TANTAL. CHIP	4.7uF 20% 6.3V (TRV87/TRV87P)
C718	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	C761	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV87/TRV87P)
C719	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV87/TRV87P)	C762	1-164-668-11	CERAMIC CHIP	510PF 5% 50V (TRV87/TRV87P)
C720	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	C763	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV87/TRV87P)
C721	1-162-966-11	CERAMIC CHIP	0.0022uF 10% 50V	C764	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V (TRV87/TRV87P)
C722	1-104-847-11	TANTAL. CHIP	22uF 20% 4V	C765	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV87/TRV87P)
C723	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C766	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)
C724	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)	C767	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V (TRV87/TRV87P)
C725	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V (TRV87/TRV87P)	C768	1-162-909-11	CERAMIC CHIP	4PF 0.25PF 50V (TRV87/TRV87P)
C726	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV87/TRV87P)	C769	1-117-863-11	CERAMIC CHIP	0.47uF 10% 6.3V (TRV87/TRV87P)
C727	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)	C770	1-117-863-11	CERAMIC CHIP	0.47uF 10% 6.3V (TRV87/TRV87P)
C728	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	C771	1-162-921-11	CERAMIC CHIP	33PF 5% 50V (TRV87/TRV87P)
C729	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	C772	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)
C730	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)	C773	1-162-922-11	CERAMIC CHIP	39PF 5% 50V (TRV87/TRV87P)
C731	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	C774	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)
C732	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V	C775	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V (TRV87/TRV87P)
C733	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V				
C734	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V				
C735	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V (TRV87/TRV87P)				
C736	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V (TRV87/TRV87P)				
C737	1-115-467-11	CERAMIC CHIP	0.22uF 10% 10V				

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C777	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV87/TRV87P)	CN973	1-766-340-21	CONNECTOR, FFC/FPC 10P (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
C778	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV87/TRV87P)	CN974	1-766-644-21	CONNECTOR, FFC/FPC 8P	
C781	1-104-847-11	TANTAL. CHIP	22uF 20% 4V (TRV87/TRV87P)	CN975	1-785-760-11	CONNECTOR, FFC/FPC (ZIF) 45P	
C801	1-115-156-11	CERAMIC CHIP	1uF 10V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	CN976	1-766-340-21	CONNECTOR, FFC/FPC 10P	
C802	1-164-156-11	CERAMIC CHIP	0.1uF 25V	CN977	1-766-336-21	CONNECTOR, FFC/FPC 6P (TRV87/TRV87P)	
C803	1-164-156-11	CERAMIC CHIP	0.1uF 25V	CN978	1-766-342-21	CONNECTOR, FFC/FPC 12P	
C804	1-164-156-11	CERAMIC CHIP	0.1uF 25V	CN979	1-766-345-21	CONNECTOR, FFC/FPC 15P	
C805	1-162-638-11	CERAMIC CHIP	1uF 16V	CN980	1-766-346-21	CONNECTOR, FFC/FPC 16P	
C806	1-119-749-11	TANTAL. CHIP	33uF 20% 4V	CN981	1-691-542-21	CONNECTOR, BOARD TO BOARD48P	
C807	1-164-156-11	CERAMIC CHIP	0.1uF 25V	CN982	1-766-346-21	CONNECTOR, FFC/FPC 16P	
C809	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	< DIODE >			
C810	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D201	8-719-055-86	DIODE KV1470TL1-3	
C811	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D202	8-719-055-86	DIODE KV1470TL1-3	
C813	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D203	8-719-027-76	DIODE 1SS357-TPH3 (TRV87/TRV87P)	
C814	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D401	8-719-075-12	DIODE MA3XD21001S0	
C815	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	D501	8-713-103-84	DIODE 1T379-01-T8A	
C817	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D502	8-719-073-01	DIODE MA111-TX (TR317/TR517/TRV17/TRV37/TRV47)	
C818	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D551	8-719-073-01	DIODE MA111-(K8).S0	
C819	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	D801	8-719-073-01	DIODE MA111-(K8).S0	
C820	1-162-969-11	CERAMIC CHIP	0.0068uF 10% 25V	D802	8-719-073-01	DIODE MA111-(K8).S0	
C821	1-162-919-11	CERAMIC CHIP	22PF 5% 50V	D803	8-719-073-01	DIODE MA111-(K8).S0	
C822	1-162-917-11	CERAMIC CHIP	15PF 5% 50V	D804	8-719-073-01	DIODE MA111-(K8).S0	
C823	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D971	8-719-073-03	DIODE MA8082-(K8).S0 (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
C824	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D972	8-719-062-16	DIODE 01ZA8.2(PLP3) (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
C825	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D973	8-719-073-03	DIODE MA8082-(K8).S0 (TRV87/TRV87P)	
C826	1-164-156-11	CERAMIC CHIP	0.1uF 25V	< FERRITE BEAD >			
C901	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB101	1-414-228-11	INDUCTOR CHIP 0UH	
C902	1-125-837-91	CERAMIC CHIP	1uF 10% 6.3V	FB102	1-414-228-11	INDUCTOR CHIP 0UH	
C903	1-162-915-11	CERAMIC CHIP	10PF 0.5PF 50V	FB201	1-500-238-22	FERRITE 0UH	
C904	1-162-915-11	CERAMIC CHIP	10PF 0.5PF 50V	FB202	1-500-238-22	FERRITE 0UH (TRV87/TRV87P)	
C907	1-164-156-11	CERAMIC CHIP	0.1uF 25V	FB203	1-500-238-22	FERRITE 0UH	
C908	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB204	1-500-238-22	FERRITE 0UH	
C909	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB205	1-500-238-22	FERRITE 0UH	
C910	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	FB206	1-500-238-22	FERRITE 0UH (TRV87/TRV87P)	
C911	1-164-156-11	CERAMIC CHIP	0.1uF 25V	FB207	1-500-238-22	FERRITE 0UH	
C912	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB291	1-500-238-22	FERRITE 0UH	
C913	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	FB501	1-500-238-22	FERRITE 0UH	
C914	1-164-156-11	CERAMIC CHIP	0.1uF 25V	FB502	1-216-864-11	METAL CHIP 0 5% 1/16W (Note)	
C915	1-164-156-11	CERAMIC CHIP	0.1uF 25V	FB503	1-500-284-21	INDUCTOR CHIP 0UH	
C971	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	FB504	1-500-238-22	FERRITE 0UH	
C972	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	FB505	1-216-864-11	METAL CHIP 0 5% 1/16W (Note)	
C973	1-164-156-11	CERAMIC CHIP	0.1uF 25V	FB506	1-500-238-22	FERRITE 0UH (TR317/TR517/TRV17/TRV37/TRV47)	
C974	1-164-156-11	CERAMIC CHIP	0.1uF 25V	FB641	1-500-238-22	FERRITE 0UH	
< CONNECTOR >				FB801	1-500-238-22	FERRITE 0UH	
CN101	1-766-346-21	CONNECTOR, FFC/FPC 16P		FB901	1-500-238-22	FERRITE 0UH	
CN501	1-779-331-11	CONNECTOR, FFC/FPC 14P					
CN551	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P					
CN971	1-766-352-21	CONNECTOR, FFC/FPC 22P					
CN972	1-766-350-21	CONNECTOR, FFC/FPC 20P					

Note : Resistors are mounted to the location where FB502,FB505 are printed.

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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< IC >					
IC101	8-752-093-69	IC CXA3265R-T4		Q106	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
IC201	6-700-453-01	IC HGT6C012FLV		Q112	8-729-037-61	TRANSISTOR RN2104F(TPL3)	
IC202	8-759-579-44	IC MB90097PFV-G-118-BND-ER (TRV87/TRV87P)		Q113	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
IC202	8-759-647-02	IC BU2995-07FV-E2 (TR317/TR517/TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		Q203	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
IC203	8-752-403-45	IC CXD1450R-T6 (TRV87/TRV87P)		Q204	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
IC204	8-759-058-58	IC TC7S04FU(TE85R) (TRV87/TRV87P)		Q205	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
IC205	8-759-058-60	IC TC7SU04FU(TE85R)		Q206	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
IC291	8-759-169-02	IC MB88344BPFV-G-BND-ER		Q207	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3) (TR517)	
IC401	8-759-640-85	IC CXA8096R-TBM		Q208	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
IC501	8-752-386-72	IC CXD2444R-T4		Q209	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3) (TR517)	
IC502	8-759-638-66	IC AD80013JSTRL		Q211	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
IC551	8-759-637-96	IC uPD16877MA-6A5-E2		Q213	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO (TRV87/TRV87P)	
IC552	8-759-444-87	IC NJM324V(TE2)		Q213	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TRV87/TRV87P)	
IC641	8-759-599-37	IC AN2225FHQ-EB		Q214	8-729-042-29	TRANSISTOR RN1104F(TPL3) (TRV87/TRV87P)	
IC701	8-752-093-72	IC CXA3284R-T6 (TRV87/TRV87P)		Q401	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
IC701	8-752-093-74	IC CXA3285R-T6 (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)		Q551	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
IC751	8-759-498-52	IC LA9511W-TBM (TRV87/TRV87P)		Q552	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
IC801	8-759-424-79	IC S-8423YFS-T2		Q553	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)	
IC802	8-759-642-45	IC TL1596CPW-ELM2000		Q554	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
IC803	8-759-663-97	IC S579621PZ-TEB		Q701	8-729-042-74	TRANSISTOR UN9216J-(K8).SO (TRV87/TRV87P)	
IC902	8-759-663-98	IC MB91192PFF-G-106-BND-ER		Q703	8-729-042-74	TRANSISTOR UN9216J-(K8).SO (TRV87/TRV87P)	
IC803	8-759-641-64	IC S579611PZ-TEB		Q704	8-729-042-74	TRANSISTOR UN9216J-(K8).SO (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
IC901	8-759-593-47	IC AK6417AM-E2		Q706	8-729-042-74	TRANSISTOR UN9216J-(K8).SO	
IC902	8-759-653-61	IC MB91192PFF-G-103-BND-ER		Q707	8-729-037-63	TRANSISTOR UN9115J-(K8).SO	
		< COIL >		Q712	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
L101	1-414-406-41	INDUCTOR 220uH		Q713	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
L102	1-412-952-11	INDUCTOR 12uH		Q801	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
L103	1-469-526-91	INDUCTOR 22uH		Q802	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TRV87/TRV87P)	
L104	1-414-406-41	INDUCTOR 220uH		Q803	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
L203	1-469-525-91	INDUCTOR 10uH		Q804	8-729-041-43	TRANSISTOR HN1L02FU(TE85R)	
L204	1-469-525-91	INDUCTOR 10uH		Q805	8-729-042-29	TRANSISTOR RN1104F(TPL3) (TRV87/TRV87P)	
L205	1-469-525-91	INDUCTOR 10uH		Q806	8-729-042-58	TRANSISTOR RN2102F(TPL3)	
L206	1-469-525-91	INDUCTOR 10uH		Q974	8-729-042-29	TRANSISTOR RN1104F(TPL3) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
L208	1-469-525-91	INDUCTOR 10uH		Q975	8-729-041-23	TRANSISTOR MGSF1P02LT1 (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	
L209	1-412-945-11	INDUCTOR 3.3uH					
L291	1-469-525-91	INDUCTOR 10uH					
L501	1-414-398-11	INDUCTOR 10uH					
L551	1-414-398-11	INDUCTOR 10uH					
L552	1-469-525-91	INDUCTOR 10uH					
L553	1-469-525-91	INDUCTOR 10uH					
L641	1-469-525-91	INDUCTOR 10uH					
L642	1-469-525-91	INDUCTOR 10uH					
L643	1-412-939-11	INDUCTOR 1uH (TRV87/TRV87P)					
L644	1-469-525-91	INDUCTOR 10uH					
L751	1-412-948-11	INDUCTOR 5.6uH (TRV87/TRV87P)					
L752	1-412-957-11	INDUCTOR 33uH (TRV87/TRV87P)					
L753	1-412-957-11	INDUCTOR 33uH (TRV87/TRV87P)					
L754	1-469-525-91	INDUCTOR 10uH (TRV87/TRV87P)					
		< TRANSISTOR >					
Q101	8-729-047-19	TRANSISTOR 2SA1965-S-TL					
Q102	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)					
Q103	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)					
Q104	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)					
Q105	8-729-042-29	TRANSISTOR RN1104F(TPL3)					

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
		< RESISTOR >					
R101	1-216-806-11	RES-CHIP	56 5% 1/16W	R229	1-216-809-11	METAL CHIP	100 5% 1/16W
R102	1-216-818-11	METAL CHIP	560 5% 1/16W	R230	1-216-840-11	METAL CHIP	39K 5% 1/16W
R103	1-216-864-11	METAL CHIP	0 5% 1/16W	R231	1-216-820-11	METAL CHIP	820 5% 1/16W
R104	1-216-864-11	METAL CHIP	0 5% 1/16W	R232	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R105	1-216-809-11	METAL CHIP	100 5% 1/16W	R233	1-216-864-11	METAL CHIP	0 5% 1/16W
R106	1-216-838-11	METAL CHIP	27K 5% 1/16W	R234	1-216-834-11	METAL CHIP	12K 5% 1/16W
R107	1-216-838-11	METAL CHIP	27K 5% 1/16W	R235	1-216-817-11	METAL CHIP	470 5% 1/16W
R108	1-216-813-11	METAL CHIP	220 5% 1/16W	R236	1-216-813-11	METAL CHIP	220 5% 1/16W
R109	1-216-813-11	METAL CHIP	220 5% 1/16W	R237	1-216-830-11	METAL CHIP	5.6K 5% 1/16W
R110	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R238	1-216-834-11	METAL CHIP	12K 5% 1/16W
R111	1-216-829-11	METAL CHIP	4.7K 5% 1/16W	R239	1-216-814-11	METAL CHIP	270 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R112	1-216-814-11	METAL CHIP	270 5% 1/16W	R240	1-216-814-11	METAL CHIP	270 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R113	1-216-813-11	METAL CHIP	220 5% 1/16W	R241	1-216-834-11	METAL CHIP	12K 5% 1/16W
R114	1-216-826-11	METAL CHIP	2.7K 5% 1/16W	R242	1-216-834-11	METAL CHIP	12K 5% 1/16W
R115	1-216-826-11	METAL CHIP	2.7K 5% 1/16W	R243	1-216-814-11	METAL CHIP	270 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R116	1-216-837-11	METAL CHIP	22K 5% 1/16W	R244	1-216-814-11	METAL CHIP	270 5% 1/16W (TR517)
R117	1-216-839-11	METAL CHIP	33K 5% 1/16W	R245	1-216-834-11	METAL CHIP	12K 5% 1/16W
R120	1-218-899-11	METAL CHIP	150K 0.5% 1/16W	R246	1-216-834-11	METAL CHIP	12K 5% 1/16W (TR517)
R121	1-216-837-11	METAL CHIP	22K 5% 1/16W	R246	1-216-833-91	RES-CHIP	10K 5% 1/16W (TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R122	1-216-837-11	METAL CHIP	22K 5% 1/16W	R247	1-216-814-11	METAL CHIP	270 5% 1/16W (TR517)
R127	1-216-853-11	METAL CHIP	470K 5% 1/16W	R247	1-216-817-11	METAL CHIP	470 5% 1/16W (TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R128	1-216-853-11	METAL CHIP	470K 5% 1/16W	R248	1-216-814-11	METAL CHIP	270 5% 1/16W (TR517)
R133	1-216-839-11	METAL CHIP	33K 5% 1/16W	R249	1-216-834-11	METAL CHIP	12K 5% 1/16W
R135	1-216-833-91	RES-CHIP	10K 5% 1/16W	R250	1-216-857-11	METAL CHIP	1M 5% 1/16W
R155	1-216-864-11	METAL CHIP	0 5% 1/16W	R252	1-216-835-11	METAL CHIP	15K 5% 1/16W
R201	1-216-864-11	METAL CHIP	0 5% 1/16W (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)	R253	1-216-835-11	METAL CHIP	15K 5% 1/16W
R202	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV87/TRV87P)	R254	1-216-864-11	METAL CHIP	0 5% 1/16W
R203	1-216-295-91	SHORT	0	R256	1-216-834-11	METAL CHIP	12K 5% 1/16W
R204	1-216-833-91	RES-CHIP	10K 5% 1/16W	R257	1-216-817-11	METAL CHIP	470 5% 1/16W
R205	1-216-845-11	METAL CHIP	100K 5% 1/16W	R258	1-216-821-11	METAL CHIP	1K 5% 1/16W
R206	1-216-864-11	METAL CHIP	0 5% 1/16W	R259	1-216-833-91	RES-CHIP	10K 5% 1/16W
R208	1-216-833-91	RES-CHIP	10K 5% 1/16W	R260	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV87/TRV87P)
R209	1-216-822-11	METAL CHIP	1.2K 5% 1/16W	R261	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV87/TRV87P)
R210	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R262	1-216-864-11	METAL CHIP	0 5% 1/16W (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)
R211	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R263	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV87/TRV87P)
R212	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R264	1-216-864-11	METAL CHIP	0 5% 1/16W (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)
R213	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TR517)	R265	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (TRV87/TRV87P)
R214	1-216-825-11	METAL CHIP	2.2K 5% 1/16W	R266	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV87/TRV87P)
R215	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TR517)	R270	1-216-864-11	METAL CHIP	0 5% 1/16W
R222	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV87/TRV87P)	R271	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV87/TRV87P)
R223	1-216-864-11	METAL CHIP	0 5% 1/16W (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)				
R224	1-216-830-11	METAL CHIP	5.6K 5% 1/16W				
R225	1-216-821-11	METAL CHIP	1K 5% 1/16W				
R226	1-216-831-11	METAL CHIP	6.8K 5% 1/16W				
R228	1-216-817-11	METAL CHIP	470 5% 1/16W				

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Ref. No.	Part No.	Description	Quantity	Percentage	Remarks	Ref. No.	Part No.	Description	Quantity	Percentage	Remarks
R273	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV87/TRV87P)	R558	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R274	1-216-864-11	METAL CHIP	0	5%	1/16W (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)	R559	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R276	1-216-864-11	METAL CHIP	0	5%	1/16W	R560	1-216-797-11	METAL CHIP	10	5%	1/16W
R278	1-216-864-11	METAL CHIP	0	5%	1/16W	R561	1-216-857-11	METAL CHIP	1M	5%	1/16W
R279	1-216-864-11	METAL CHIP	0	5%	1/16W	R562	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R280	1-216-864-11	METAL CHIP	0	5%	1/16W	R563	1-216-833-91	RES-CHIP	10K	5%	1/16W
R281	1-216-821-11	METAL CHIP	1K	5%	1/16W	R564	1-216-849-11	METAL CHIP	220K	5%	1/16W
R283	1-216-864-11	METAL CHIP	0	5%	1/16W	R565	1-216-853-11	METAL CHIP	470K	5%	1/16W
R401	1-216-841-11	METAL CHIP	47K	5%	1/16W	R566	1-216-853-11	METAL CHIP	470K	5%	1/16W
R402	1-216-851-11	METAL CHIP	330K	5%	1/16W	R567	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	R568	1-216-835-11	METAL CHIP	15K	5%	1/16W
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W	R569	1-216-837-11	METAL CHIP	22K	5%	1/16W
R405	1-216-845-11	METAL CHIP	100K	5%	1/16W	R570	1-216-853-11	METAL CHIP	470K	5%	1/16W
R406	1-216-845-11	METAL CHIP	100K	5%	1/16W	R571	1-216-821-11	METAL CHIP	1K	5%	1/16W
R407	1-216-817-11	METAL CHIP	470	5%	1/16W	R572	1-216-821-11	METAL CHIP	1K	5%	1/16W
R408	1-217-671-11	METAL CHIP	1	5%	1/10W	R573	1-216-815-11	METAL CHIP	330	5%	1/16W
R409	1-217-671-11	METAL CHIP	1	5%	1/10W	R574	1-216-837-11	METAL CHIP	22K	5%	1/16W
R410	1-217-671-11	METAL CHIP	1	5%	1/10W	R575	1-216-821-11	METAL CHIP	1K	5%	1/16W
R411	1-216-023-00	METAL CHIP	82	5%	1/10W	R576	1-216-833-91	RES-CHIP	10K	5%	1/16W
R413	1-216-864-11	METAL CHIP	0	5%	1/16W	R577	1-216-841-11	METAL CHIP	47K	5%	1/16W
R414	1-216-817-11	METAL CHIP	470	5%	1/16W	R644	1-216-804-11	METAL CHIP	39	5%	1/16W (TRV67/TRV87/TRV87P)
R416	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R645	1-216-803-11	METAL CHIP	33	5%	1/16W (TRV67/TRV87/TRV87P)
R423	1-216-864-11	METAL CHIP	0	5%	1/16W	R646	1-216-804-11	METAL CHIP	39	5%	1/16W (TRV67/TRV87/TRV87P)
R424	1-216-835-11	METAL CHIP	15K	5%	1/16W	R647	1-216-803-11	METAL CHIP	33	5%	1/16W (TRV67/TRV87/TRV87P)
R425	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	R648	1-216-804-11	METAL CHIP	39	5%	1/16W
R426	1-216-845-11	METAL CHIP	100K	5%	1/16W	R649	1-216-803-11	METAL CHIP	33	5%	1/16W
R427	1-216-864-11	METAL CHIP	0	5%	1/16W	R650	1-218-847-11	METAL CHIP	1K	0.5%	1/16W
R428	1-217-671-11	METAL CHIP	1	5%	1/10W	R651	1-218-879-11	METAL CHIP	22K	0.5%	1/16W
R429	1-217-671-11	METAL CHIP	1	5%	1/10W	R652	1-218-876-11	METAL CHIP	16K	0.5%	1/16W
R430	1-216-835-11	METAL CHIP	15K	5%	1/16W	R653	1-216-837-11	METAL CHIP	22K	5%	1/16W (TRV87/TRV87P)
R431	1-216-864-11	METAL CHIP	0	5%	1/16W	R655	1-216-821-11	METAL CHIP	1K	5%	1/16W
R432	1-216-841-11	METAL CHIP	47K	5%	1/16W	R656	1-216-821-11	METAL CHIP	1K	5%	1/16W (TRV67/TRV87/TRV87P)
R433	1-216-864-11	METAL CHIP	0	5%	1/16W	R657	1-216-821-11	METAL CHIP	1K	5%	1/16W (TRV67/TRV87/TRV87P)
R434	1-216-833-91	RES-CHIP	10K	5%	1/16W	R658	1-216-821-11	METAL CHIP	1K	5%	1/16W
R435	1-216-833-91	RES-CHIP	10K	5%	1/16W	R703	1-216-841-11	METAL CHIP	47K	5%	1/16W
R436	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R704	1-216-833-91	RES-CHIP	10K	5%	1/16W
R501	1-216-864-11	METAL CHIP	0	5%	1/16W	R705	1-216-809-11	METAL CHIP	100	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R502	1-216-864-11	METAL CHIP	0	5%	1/16W	R706	1-216-809-11	METAL CHIP	100	5%	1/16W (TRV87/TRV87P)
R503	1-216-845-11	METAL CHIP	100K	5%	1/16W	R707	1-216-841-11	METAL CHIP	47K	5%	1/16W (TRV87/TRV87P)
R504	1-216-814-11	METAL CHIP	270	5%	1/16W	R708	1-216-833-91	RES-CHIP	10K	5%	1/16W (TRV87/TRV87P)
R505	1-216-809-11	METAL CHIP	100	5%	1/16W	R710	1-216-836-11	METAL CHIP	18K	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R506	1-216-812-11	METAL CHIP	180	5%	1/16W	R711	1-216-849-11	METAL CHIP	220K	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R509	1-216-857-11	METAL CHIP	1M	5%	1/16W	R712	1-216-847-11	METAL CHIP	150K	5%	1/16W
R512	1-216-853-11	METAL CHIP	470K	5%	1/16W	R713	1-216-841-11	METAL CHIP	47K	5%	1/16W
R515	1-216-841-11	METAL CHIP	47K	5%	1/16W	R714	1-216-853-11	METAL CHIP	470K	5%	1/16W
R516	1-216-841-11	METAL CHIP	47K	5%	1/16W						
R517	1-216-841-11	METAL CHIP	47K	5%	1/16W						
R518	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV57/TRV57P/TRV67/TRV87/TRV87P)						
R519	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR317/TR517/TRV17/TRV37/TRV47)						
R551	1-216-841-11	METAL CHIP	47K	5%	1/16W						
R552	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R553	1-216-295-91	SHORT	0								
R555	1-216-843-11	METAL CHIP	68K	5%	1/16W						
R556	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R557	1-216-843-11	METAL CHIP	68K	5%	1/16W						

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R715	1-216-853-11	METAL CHIP	470K 5% 1/16W (TRV87/TRV87P)	R775	1-216-864-11	METAL CHIP	0 5% 1/16W (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)
R716	1-216-864-11	METAL CHIP	0 5% 1/16W	R777	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV87/TRV87P)
R717	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV87/TRV87P)	R801	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R719	1-216-864-11	METAL CHIP	0 5% 1/16W	R802	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (TRV87/TRV87P)
R720	1-216-820-11	METAL CHIP	820 5% 1/16W	R803	1-216-845-11	METAL CHIP	100K 5% 1/16W
R721	1-216-821-11	METAL CHIP	1K 5% 1/16W	R805	1-216-827-11	METAL CHIP	3.3K 5% 1/16W (TR317/TR517)
R722	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV87/TRV87P)	R806	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R723	1-216-864-11	METAL CHIP	0 5% 1/16W	R807	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TRV87/TRV87P)
R724	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV87/TRV87P)	R808	1-216-853-11	METAL CHIP	470K 5% 1/16W
R725	1-216-833-91	RES-CHIP	10K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R809	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R726	1-216-833-91	RES-CHIP	10K 5% 1/16W (TRV87/TRV87P)	R810	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV87/TRV87P)
R728	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R811	1-216-845-11	METAL CHIP	100K 5% 1/16W
R729	1-216-833-91	RES-CHIP	10K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R813	1-216-853-11	METAL CHIP	470K 5% 1/16W
R730	1-216-833-91	RES-CHIP	10K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R814	1-216-853-11	METAL CHIP	470K 5% 1/16W
R731	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)	R815	1-216-853-11	METAL CHIP	470K 5% 1/16W
R755	1-216-836-11	METAL CHIP	18K 5% 1/16W (TRV87/TRV87P)	R816	1-216-853-11	METAL CHIP	470K 5% 1/16W
R756	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (TRV87/TRV87P)	R817	1-216-853-11	METAL CHIP	470K 5% 1/16W
R757	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (TRV87/TRV87P)	R818	1-216-853-11	METAL CHIP	470K 5% 1/16W
R760	1-216-835-11	METAL CHIP	15K 5% 1/16W (TRV87/TRV87P)	R819	1-216-853-11	METAL CHIP	470K 5% 1/16W
R761	1-216-857-11	METAL CHIP	1M 5% 1/16W (TRV87/TRV87P)	R820	1-216-845-11	METAL CHIP	100K 5% 1/16W
R763	1-218-879-11	METAL CHIP	22K 0.5% 1/16W (TRV87/TRV87P)	R821	1-216-853-11	METAL CHIP	470K 5% 1/16W
R764	1-216-815-11	METAL CHIP	330 5% 1/16W (TRV87/TRV87P)	R822	1-216-841-11	METAL CHIP	47K 5% 1/16W
R765	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV87/TRV87P)	R823	1-216-833-91	RES-CHIP	10K 5% 1/16W
R767	1-216-817-11	METAL CHIP	470 5% 1/16W (TRV87/TRV87P)	R824	1-216-826-11	METAL CHIP	2.7K 5% 1/16W
R768	1-216-847-11	METAL CHIP	150K 5% 1/16W (TRV87/TRV87P)	R825	1-216-821-11	METAL CHIP	1K 5% 1/16W
R770	1-216-847-11	METAL CHIP	150K 5% 1/16W (TRV87/TRV87P)	R831	1-216-845-11	METAL CHIP	100K 5% 1/16W
R771	1-216-818-11	METAL CHIP	560 5% 1/16W (TRV87/TRV87P)	R832	1-216-857-11	METAL CHIP	1M 5% 1/16W
R772	1-216-831-11	METAL CHIP	6.8K 5% 1/16W (TRV87/TRV87P)	R833	1-218-903-11	METAL CHIP	220K 0.5% 1/16W
R773	1-216-817-11	METAL CHIP	470 5% 1/16W (TRV87/TRV87P)	R834	1-218-903-11	METAL CHIP	220K 0.5% 1/16W
R774	1-216-840-11	METAL CHIP	39K 5% 1/16W (TRV87/TRV87P)	R835	1-218-911-11	METAL CHIP	470K 0.5% 1/16W
				R836	1-218-911-11	METAL CHIP	470K 0.5% 1/16W
				R837	1-216-845-11	METAL CHIP	100K 5% 1/16W
				R838	1-216-845-11	METAL CHIP	100K 5% 1/16W
				R839	1-216-845-11	METAL CHIP	100K 5% 1/16W
				R840	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R843	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R844	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R845	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R847	1-216-845-11	METAL CHIP	100K 5% 1/16W
				R848	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R849	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R865	1-216-841-11	METAL CHIP	47K 5% 1/16W
				R866	1-216-854-11	METAL CHIP	560K 5% 1/16W
				R867	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R868	1-216-853-11	METAL CHIP	470K 5% 1/16W

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Ref. No.	Part No.	Description	Quantity	Lot %	Remarks
R869	1-216-853-11	METAL CHIP	470K	5%	1/16W
R870	1-216-853-11	METAL CHIP	470K	5%	1/16W
R871	1-216-857-11	METAL CHIP	1M	5%	1/16W
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W
R873	1-216-845-11	METAL CHIP	100K	5%	1/16W
R874	1-216-821-11	METAL CHIP	1K	5%	1/16W
R875	1-216-821-11	METAL CHIP	1K	5%	1/16W
R876	1-219-570-11	RES-CHIP	10M	5%	1/16W
R877	1-216-821-11	METAL CHIP	1K	5%	1/16W
R878	1-216-845-11	METAL CHIP	100K	5%	1/16W
R879	1-216-853-11	METAL CHIP	470K	5%	1/16W
R880	1-216-853-11	METAL CHIP	470K	5%	1/16W
R881	1-216-853-11	METAL CHIP	470K	5%	1/16W
R882	1-216-817-11	METAL CHIP	470	5%	1/16W
R886	1-216-853-11	METAL CHIP	470K	5%	1/16W
R887	1-216-853-11	METAL CHIP	470K	5%	1/16W
R888	1-216-821-11	METAL CHIP	1K	5%	1/16W
R889	1-216-821-11	METAL CHIP	1K	5%	1/16W
R890	1-216-845-11	METAL CHIP	100K	5%	1/16W
R891	1-216-845-11	METAL CHIP	100K	5%	1/16W
R892	1-216-833-91	RES-CHIP	10K	5%	1/16W
R901	1-216-821-11	METAL CHIP	1K	5%	1/16W
R902	1-216-854-11	METAL CHIP	560K	5%	1/16W
R903	1-216-845-11	METAL CHIP	100K	5%	1/16W
R904	1-216-845-11	METAL CHIP	100K	5%	1/16W
R905	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)
R906	1-216-853-11	METAL CHIP	470K	5%	1/16W
R907	1-216-845-11	METAL CHIP	100K	5%	1/16W
R908	1-216-845-11	METAL CHIP	100K	5%	1/16W
R909	1-216-845-11	METAL CHIP	100K	5%	1/16W
R910	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R911	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R912	1-216-845-11	METAL CHIP	100K	5%	1/16W
R913	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R914	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R915	1-216-864-11	METAL CHIP	0	5%	1/16W
R916	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R917	1-216-845-11	METAL CHIP	100K	5%	1/16W
R918	1-216-833-91	RES-CHIP	10K	5%	1/16W
R919	1-216-833-91	RES-CHIP	10K	5%	1/16W
R920	1-216-841-11	METAL CHIP	47K	5%	1/16W
R921	1-216-845-11	METAL CHIP	100K	5%	1/16W
R922	1-216-845-11	METAL CHIP	100K	5%	1/16W
R923	1-216-853-11	METAL CHIP	470K	5%	1/16W
R924	1-216-853-11	METAL CHIP	470K	5%	1/16W
R925	1-216-841-11	METAL CHIP	47K	5%	1/16W
R930	1-216-841-11	METAL CHIP	47K	5%	1/16W
R931	1-216-841-11	METAL CHIP	47K	5%	1/16W
R932	1-216-864-11	METAL CHIP	0	5%	1/16W
R933	1-216-864-11	METAL CHIP	0	5%	1/16W
R934	1-216-845-11	METAL CHIP	100K	5%	1/16W
R972	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)
R973	1-216-821-11	METAL CHIP	1K	5%	1/16W
R974	1-216-821-11	METAL CHIP	1K	5%	1/16W (TRV87/TRV87P)
R977	1-216-864-11	METAL CHIP	0	5%	1/16W (TR317/TR517)

Ref. No.	Part No.	Description	Quantity	Lot %	Remarks
R978	1-216-864-11	METAL CHIP	0	5%	1/16W (TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R979	1-216-864-11	METAL CHIP	0	5%	1/16W
R980	1-216-821-11	METAL CHIP	1K	5%	1/16W
R981	1-216-864-11	METAL CHIP	0	5%	1/16W
R982	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR517)
R983	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR517)
R984	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R985	1-216-842-11	METAL CHIP	56K	5%	1/16W (TRV57/TRV57P)
R985	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV67/TRV87/TRV87P)
R985	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR517/TRV17/TRV37)
R985	1-216-833-91	RES-CHIP	10K	5%	1/16W (TR317/TRV47)
R986	1-216-843-11	METAL CHIP	68K	5%	1/16W (TRV57/TRV57P)
R986	1-216-841-11	METAL CHIP	47K	5%	1/16W (TRV67)
R986	1-216-837-11	METAL CHIP	22K	5%	1/16W (TRV87/TRV87P)
R986	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR517/TRV17/TRV37)
R987	1-216-857-11	METAL CHIP	1M	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R988	1-216-845-11	METAL CHIP	100K	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R988	1-216-833-91	RES-CHIP	10K	5%	1/16W (TR317/TR517)
R989	1-216-837-11	METAL CHIP	22K	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
R989	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR317/TR517)
R990	1-216-295-11	SHORT	0 (TR317)		
R990	1-217-671-11	METAL CHIP	1	5%	1/10W (TR317/TR517)
R991	1-217-671-11	METAL CHIP	1	5%	1/10W (TR517)
R992	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)
< VIBRATOR >					
X501	1-760-320-11	VIBRATOR, CRYSTAL (28.636363MHz)			
X641	1-767-028-21	VIBRATOR, CRYSTAL (14.318182MHz)			(TRV87/TRV87P)
X801	1-767-980-21	VIBRATOR, CERAMIC (20.0MHz)			(TR317:E, HK/TR517:US, E/TRV17/TRV37/TRV57/TRV57P)
X802	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)			
X901	1-760-655-41	VIBRATOR, CRYSTAL (20.0MHz)			

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
A-7074-193-A	VF-141 BOARD, COMPLETE (TR517)			R4516	1-216-841-11	METAL CHIP	47K 5% 1/16W
	*****			R4517	1-216-843-11	METAL CHIP	68K 5% 1/16W
	(Ref.No.;10000 Series)			R4518	1-216-837-11	METAL CHIP	22K 5% 1/16W
	< CAPACITOR >			R4520	1-216-843-11	METAL CHIP	68K 5% 1/16W
C4501	1-127-688-21	TANTAL. CHIP	10uF 20% 6.3V	R4521	1-216-857-11	METAL CHIP	1M 5% 1/16W
C4503	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R4522	1-216-845-11	METAL CHIP	100K 5% 1/16W
C4504	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R4524	1-216-844-11	METAL CHIP	82K 5% 1/16W
C4507	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R4525	1-216-838-11	METAL CHIP	27K 5% 1/16W
C4508	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R4526	1-216-809-11	METAL CHIP	100 5% 1/16W
C4509	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R4527	1-216-809-11	METAL CHIP	100 5% 1/16W
C4510	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R4528	1-216-809-11	METAL CHIP	100 5% 1/16W
C4511	1-164-739-11	CERAMIC CHIP	560PF 5% 50V	R4529	1-216-833-91	RES-CHIP	10K 5% 1/16W
C4512	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R4530	1-216-845-11	METAL CHIP	100K 5% 1/16W
C4513	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V	R4534	1-216-864-11	METAL CHIP	0 5% 1/16W
C4514	1-107-687-11	TANTAL. CHIP	3.3uF 20% 20V	R4542	1-216-864-11	METAL CHIP	0 5% 1/16W
C4515	1-164-357-11	CERAMIC CHIP	1000PF 5% 50V	R4543	1-216-864-11	METAL CHIP	0 5% 1/16W
C4516	1-162-928-11	CERAMIC CHIP	120PF 5% 50V	R4544	1-216-853-11	METAL CHIP	470K 5% 1/16W
C4517	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V				
C4518	1-109-982-11	CERAMIC CHIP	1uF 10% 10V				
C4519	1-109-982-11	CERAMIC CHIP	1uF 10% 10V	A-7073-838-A	VF-129 (N) BOARD, COMPLETE		
C4520	1-109-982-11	CERAMIC CHIP	1uF 10% 10V		(TR317/TRV17/TRV37/TRV47/TRV57/TRV57P/		
C4521	1-107-826-91	CERAMIC CHIP	0.1uF 10% 16V		TRV67/TRV87/TRV87P)		
C4523	1-115-566-11	CERAMIC CHIP	4.7uF 10% 10V		*****		
C4524	1-164-505-11	CERAMIC CHIP	2.2uF 16V		(Ref.No.;1000 Series)		
C4526	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V		< CAPACITOR >		
C4527	1-107-725-11	CERAMIC CHIP	0.1uF 10% 16V	C901	1-107-854-11	TANTAL. CHIP	68uF 20% 6.3V
	< CONNECTOR >			C902	1-163-038-91	CERAMIC CHIP	0.1uF 25V
CN4501	1-764-526-11	CONNECTOR, FFC/FPC 18P		C903	1-135-145-11	TANTALUM CHIP	0.47uF 10% 35V
CN4502	1-750-630-11	CONNECTOR, FFC/FPC (ZIF) 16P		C904	1-162-965-11	CERAMIC CHIP	0.0015uF 10% 50V
	< DIODE >			C905	1-104-752-11	TANTAL. CHIP	33uF 20% 6.3V
D4502	8-713-102-80	DIODE 1T369-01-T8A		C906	1-162-638-11	CERAMIC CHIP	1uF 16V
D4503	8-719-077-74	DIODE MA2S784008S0		C907	1-104-563-11	FILM CHIP	0.1uF 5% 16V
D4504	8-719-077-74	DIODE MA2S784008S0		C908	1-162-920-11	CERAMIC CHIP	27PF 5% 50V
	< FERRITE BEAD >			C909	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V
FB4502	1-500-329-11	INDUCTOR CHIP 0UH		△ C910	1-162-625-11	CERAMIC CHIP	0.0047uF 5% 50V
FB4505	1-500-329-11	INDUCTOR CHIP 0UH		△ C911	1-164-715-11	CERAMIC CHIP	0.0068uF 5% 50V
	< IC >			C912	1-107-854-11	TANTAL. CHIP	68uF 20% 6.3V
IC4501	8-759-591-95	IC RB5P0040M1		C913	1-135-145-11	TANTALUM CHIP	0.47uF 10% 35V
IC4502	8-752-400-96	IC CXD3501R-T4		C914	1-113-984-11	TANTAL. CHIP	1.5uF 20% 35V
	< COIL >			C915	1-163-037-11	CERAMIC CHIP	0.022uF 10% 25V
L4501	1-469-525-91	INDUCTOR 10uH		C916	1-164-611-11	CERAMIC CHIP	0.001uF 10% 500V
L4504	1-412-949-21	INDUCTOR 6.8uH			< CONNECTOR >		
	< TRANSISTOR >			* CN901	1-785-379-01	HOUSING, CONNECTOR	
Q4504	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).S0		* CN902	1-580-057-11	PIN, CONNECTOR (SMD) 4P	
	< RESISTOR >				< DIODE >		
R4505	1-216-853-11	METAL CHIP	470K 5% 1/16W	D901	8-719-951-21	DIODE PR1102W-TR	
R4507	1-218-895-11	METAL CHIP	100K 0.5% 1/16W	D903	8-719-073-01	DIODE MA111-(K8).S0	
R4508	1-216-845-11	METAL CHIP	100K 5% 1/16W		< IC >		
R4513	1-216-835-11	METAL CHIP	15K 5% 1/16W	IC901	8-759-196-14	IC BA7149F-E2	
R4515	1-216-826-11	METAL CHIP	2.7K 5% 1/16W				

Note :

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note :

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
		< COIL >	
L901	1-412-031-11	INDUCTOR CHIP 47uH	
L902	1-410-387-11	INDUCTOR CHIP 33uH	
△L903	1-411-697-11	COIL, FERRITE (HLC)	
		< TRANSISTOR >	
Q901	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
Q902	8-729-106-68	TRANSISTOR 2SD1615-T1GLGK	
Q903	8-729-216-31	TRANSISTOR 2SA1163G-TE85L	
Q904	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R901	1-216-817-11	METAL CHIP 470 5% 1/16W	
R902	1-216-817-11	METAL CHIP 470 5% 1/16W	
R903	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R904	1-216-833-91	RES-CHIP 10K 5% 1/16W	
R905	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R906	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R907	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R908	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R909	1-216-833-91	RES-CHIP 10K 5% 1/16W	
R910	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R911	1-216-160-00	RES-CHIP 27 5% 1/8W	
R912	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R915	1-218-879-11	METAL CHIP 22K 0.5% 1/16W	
R917	1-218-891-11	METAL CHIP 68K 0.5% 1/16W	
R918	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R919	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R920	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R921	1-216-795-11	RES-CHIP 6.8 5% 1/16W	
R922	1-216-850-11	METAL CHIP 270K 5% 1/16W	
R923	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R924	1-216-862-11	RES-CHIP 2.7M 5% 1/16W	
R925	1-216-862-11	RES-CHIP 2.7M 5% 1/16W	
R926	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R927	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R928	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R929	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R930	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
R931	1-217-671-11	METAL CHIP 1 5% 1/10W	
R932	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
		< VARIABLE RESISTOR >	
RV903	1-238-852-11	RES, ADJ, CERMET 470	
RV904	1-238-095-11	RES, ADJ, CERMET 470K	
		< TRANSFORMER >	
△T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK	
		< FLAT CABLE >	
△W901	1-540-019-21	SOCKET ASSY, CRT	

Ref. No.	Part No.	Description	Remarks
	A-7074-130-A	VL-29 BOARD, COMPLETE (TRV17/TRV37/TRV57/TRV57P/ TRV67/TRV87/TRV87P) ***** (Ref.No.;1000 Series)	
		< CAPACITOR >	
C151	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C153	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CONNECTOR >	
CN151	1-766-644-21	CONNECTOR, FFC/FPC 8P	
		< COIL >	
L151	1-416-344-11	INDUCTOR 10uH	
		< TRANSISTOR >	
Q151	8-729-043-94	TRANSISTOR CPH3106-PM-TL	
Q152	8-729-028-26	TRANSISTOR 2SK1829(TE85L)	
		< RESISTOR >	
R151	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R152	1-216-864-11	METAL CHIP 0 5% 1/16W	
R153	1-216-813-11	METAL CHIP 220 5% 1/16W	
R154	1-216-821-11	METAL CHIP 1K 5% 1/16W	
		MISCELLANEOUS *****	
1	1-517-857-11	LIGHT, VIDEO (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
13	1-694-384-11	TERMINAL BOARD, BATTERY	
15	1-672-663-21	FP-49 FLEXIBLE BOARD(TRV87/TRV87P)	
21	1-467-574-21	REMOTE COMMANDER (RMT-708)	
23	1-672-670-11	FP-43 FLEXIBLE BOARD	
51	1-475-621-11	SWITCH BLOCK, CONTROL(MR-8500)	
55	1-791-948-11	CABLE, FLEXIBLE FLAT (FFC-001)	
58	1-672-668-21	FP-62 FLEXIBLE BOARD(TRV87/TRV87P)	
101	1-475-621-11	SWITCH BLOCK, CONTROL(MR-8500)	
104	1-791-948-11	CABLE, FLEXIBLE FLAT (FFC-001)	
108	1-803-844-81	DISPLAY PANEL, LIQUID CRYSTAL (TR317/TR517)	
152	1-676-300-11	FP-152 FLEXIBLE BOARD	
154	1-960-161-11	HARNESS (DP-78)	
168	1-803-844-81	DISPLAY PANEL, LIQUID CRYSTAL (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
214	1-418-758-21	SWITCH BLOCK, CONTROL (SS-9700)	
217	1-676-298-11	FP-150 FLEXIBLE BOARD	
221	1-418-760-11	SWITCH BLOCK, CONTROL (FK-8500) (TRV87/TRV87P)	
221	1-418-760-21	SWITCH BLOCK, CONTROL (FK-8500) (TR317/TR517/TRV17/TRV37/TRV47/ TRV57/TRV57P/TRV67)	
225	1-672-673-11	FP-46 FLEXIBLE BOARD (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
227	1-676-296-11	FP-147 FLEXIBLE BOARD	

Note :

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note :

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
230	1-672-671-11	FP-44 FLEXIBLE BOARD (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)			1-575-334-11	CORD, CONNECTION (A/V)(1.5m) (TRV87:US,CND,E,HK,KR,JE/TRV87P)	
230	1-676-297-11	FP-149 FLEXIBLE BOARD(TR317/TR517)			1-696-862-21	CORD, CONNECTION (A/V)(1.5m) (TR317:E,HK,KR/TRV517:US,CND,E/TRV17/TRV37:US,CND,E/ TRV47/TRV57:US,CND,E,HK,KR,JE/TRV57P/ TRV67:US,E,HK,KR,JE)	
262	1-792-454-11	CABLE, FLEXIBLE FLAT (FFC-289)		△	1-769-608-11	CORD, POWER (TR317:E/TR517:E/TRV37:E/TRV47:E/TRV57:E/ TRV57P/TRV67:E/TRV87:E/TRV87P)	
312	1-676-299-11	FP-151 FLEXIBLE BOARD		△	1-783-374-11	CORD, POWER (TR317:HK/TRV47:HK/TRV57:HK/TRV67:HK/TRV87:HK)	
351	8-848-729-01	DEVICE, LENS LSV-630A		△	1-790-073-11	CORD, POWER (TRV47:JE/TRV57:JE/TRV67:JE/TRV87:JE)	
360	1-758-084-21	FILTER BLOCK, OPTICAL (TR317/TR517/TRV17/TRV37/TRV47/TRV87/TRV87P)		△	1-790-107-22	CORD, POWER (TR517:US,CND/TRV17/TRV37:US,CND/TRV57:US,CND/ TRV67:US/TRV87:US,CND)	
360	1-758-133-21	FILTER BLOCK, OPTICAL (TRV57/TRV57P/TRV67)			3-868-320-11	MANUAL, INSTRUCTION (ENGLISH) (TR517:US,CND)	
760	1-658-213-11	FP-355 FLEXIBLE BOARD			3-868-320-21	MANUAL, INSTRUCTION (FRENCH) (TR517:CND)	
762	1-657-786-13	FP-221 FLEXIBLE BOARD			3-868-320-31	MANUAL, INSTRUCTION (SPANISH/PORTUGUESE) (TR317:E/TR517:E)	
764	1-658-214-11	FP-356 FLEXIBLE BOARD			3-868-320-41	MANUAL, INSTRUCTION (TRADITIONAL CHINESE) (TR317:E,HK/TR517:E)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD			3-868-320-51	MANUAL, INSTRUCTION (KOREAN) (TR317:KR)	
817	1-657-784-11	FP-220 FLEXIBLE BOARD			3-868-320-61	MANUAL, INSTRUCTION (ARABIC) (TR317:E/TR517:E)	
D001	8-719-988-42	DIODE GL453			3-868-320-71	MANUAL, INSTRUCTION (ENGLISH) (TR317:E,HK/TR517:E)	
IC201	A-7031-040-A	CCD BLOCK ASSY (TR317/TR517/TRV17/TRV37/TRV47)			3-868-323-11	MANUAL, INSTRUCTION (ENGLISH) (TRV37:US,CND/TRV57:US,CND/TRV67:US/TRV87:US,CND)	
IC201	A-7031-052-A	CCD BLOCK ASSY (TRV87/TRV87P)			3-868-323-21	MANUAL, INSTRUCTION (FRENCH) (TRV17/TRV37:CND/TRV57:CND/TRV87:CND)	
IC201	A-7031-055-A	CCD BLOCK ASSY (TRV57/TRV57P/TRV67)			3-868-323-31	MANUAL, INSTRUCTION (SPANISH/PORTUGUESE)(TRV37:E/TRV47:E,JE/TRV57:E,JE/ TRV57P/TRV67:E,JE/TRV87:E,JE/TRV87P)	
LCD901	1-803-852-31	INDICATOR MODULE, LIQUID CRYSTAL			3-868-323-41	MANUAL, INSTRUCTION (TRADITIONAL CHINESE)(TRV47:E,HK/TRV57:E,HK/ TRV67:E,HK/TRV87:E,HK)	
LCD902	8-753-026-74	LX0032-AK-J			3-868-323-51	MANUAL, INSTRUCTION (KOREAN) (TRV47:KR,JE/TRV57:KR,JE/TRV67:KR,JE/TRV87:KR,JE)	
△ LED901	1-517-858-11	LIGHT, BACK(TRV87/TRV87P)			3-868-323-61	MANUAL, INSTRUCTION (ARABIC) (TRV47:E/TRV57:E/TRV67:E/TRV87:E)	
M902	8-835-531-32	MOTOR, DC SCE-0601A/C-NP (CAPSTAN)			3-868-323-71	MANUAL, INSTRUCTION (ENGLISH) (TRV37:E/TRV47:E,HK,JE/TRV57:E,HK,JE/TRV57P/ TRV67:E,HK,JE/TRV87:E,HK,JE/TRV87P)	
M905	1-763-262-11	MOTOR, STEPPING F630			3-987-015-01	BELT (S), SHOULDER (TR317:E,HK,KR/TR517:US,CND,E/TRV17/TRV37:US,CND,E/TRV47/ TRV57:US,CND,E,HK,KR,JE/TRV57P/TRV67:US,E,HK,KR,JE/ TRV87:US,CND,E,HK,KR,JE/TRV87P)	
M906	1-763-046-21	MOTOR, STEPPING Z600			3-988-960-01	BAG (8500), CARRYING (TRV57P/TRV87P)	
MIC901	1-542-312-11	MICROPHONE			A-7094-140-A	NP-330 BATTERY PACK (TR517:US,CND/TRV17/TRV37:US,CND/TRV57:US,CND/ TRV67:US/TRV87:US,CND)	
MIC902	1-542-312-11	MICROPHONE			A-7094-140-A	NP-330 BATTERY PACK (TR317/TR517:E/TRV37:E/TRV47/TRV57:E,HK,KR,JE/TRV57P/ TRV67:E,HK,KR,JE/TRV87:E,HK,KR,JE/TRV87P)	
△ ND901	1-517-752-31	TUBE, FLUORESCENT,COLD CATHODE					
S001	1-682-614-11	SWITCH,PUSH(3KEY)					
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C.LOCK)					
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)					
S910	1-771-848-11	SWITCH, PUSH					
SP901	1-504-753-41	SPEAKER (2.8CM)					
△ V901	1-452-673-61	CRT ASSY (M01KXX90WB) (Hi8 MP,ME/MP,REC PROOF)					
ACCESSORIES *****							
	1-467-574-21	REMOTE COMMANDER (RMT-708) (TRV47/TRV57:US,CND,E,HK,KR,JE/TRV57P/TRV67:US,E,HK,KR,JE/ TRV87:US,CND,E,HK,KR,JE/TRV87P)					
△	1-475-599-11	ADAPTOR, AC (TR317:E,HK,TR517:US,CND,E/TRV17/TRV37:US,CND,E/ TRV47:E,HK,JE/TRV57:US,CND,E,HK,JE/TRV57P/ TRV67:US,E,HK,JE/TRV87:US,CND,E,HK,JE/TRV87P)					
△	1-475-599-71	ADAPTOR, AC (TR317:KR/TRV47:KR/TRV57:KR/TRV67:KR/TRV87:KR)					
△	1-569-007-11	ADAPTOR, CONVERSION (TRV47:JE/TRV57:JE/TRV67:JE/TRV87:JE)					
△	1-569-008-21	ADAPTOR, CONVERSION 2P (TR317:E/TR517:E/TRV37:E/TRV47:E/TRV57:E/ TRV57P/TRV67:E/TRV87:E/TRV87P)					

Be sure to read "Precautions upon replacing CCD imager" on page 4-8 when changing the CCD imager.

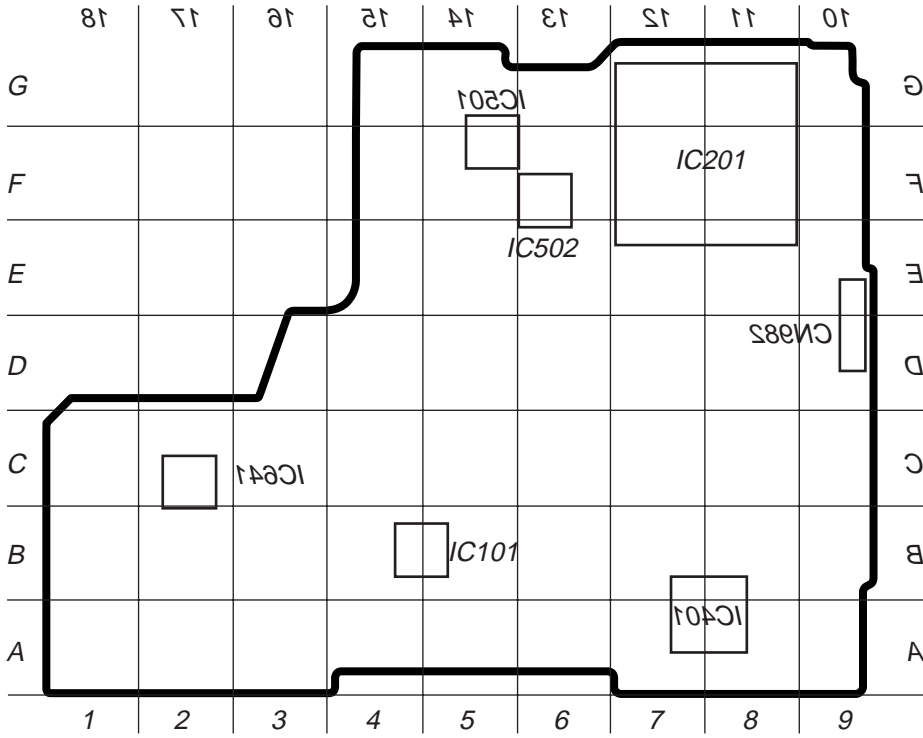
<p>Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.</p>	<p>Note : Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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<PARTS REFERENCE SHEET>

You can find the parts position of location of mount locations applying to VC-234 board of a set.

VC-234 CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

SIDE A

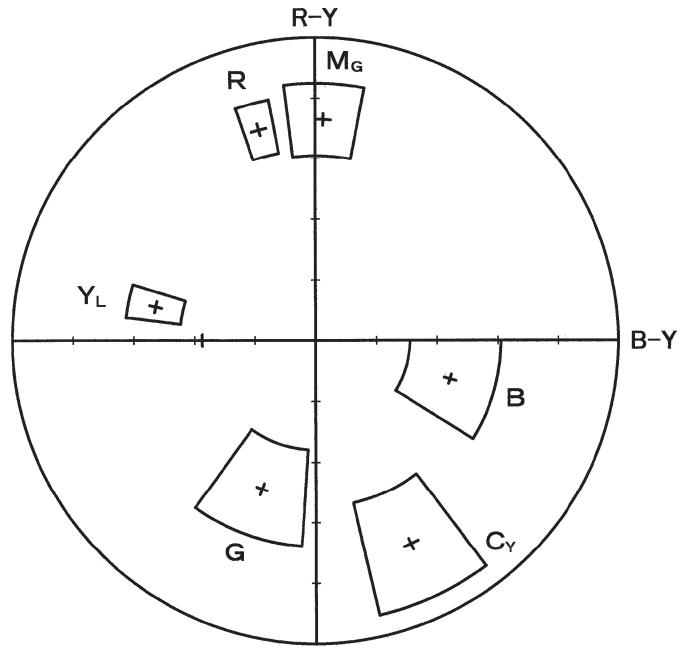


VC-234 CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P
SIDE B



〈FOR CAMERA COLOR REPRODUCTION ADJUSTMENT〉

For 760H model and 510H TYPE S model

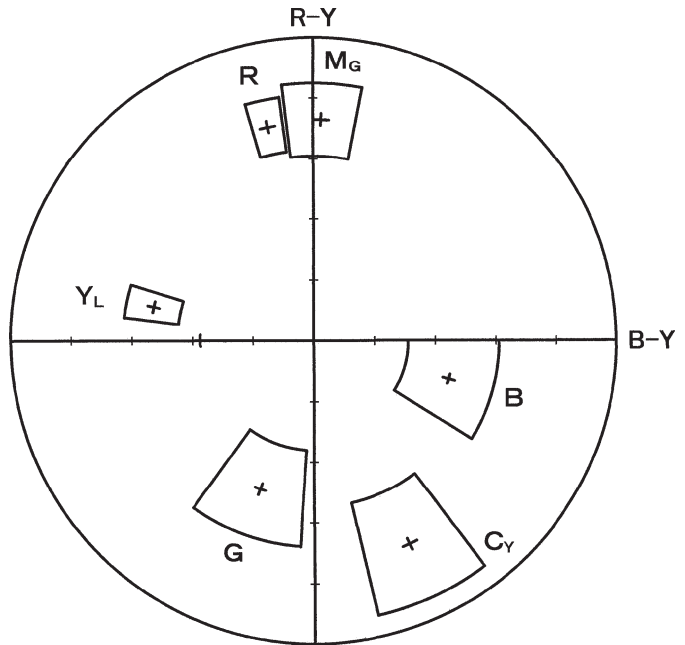


Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts referencesheets with a clear sheet for use.

CCD-TRV57/TRV57P/TRV67/
TRV87/TRV87P



For 510H TYPE P model



CCD-TR317/TR517/TRV17/
TRV37/TRV47



**CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P**

SONY[®]

SERVICE MANUAL

2000. 10

US Model

CCD-TR517/TRV37/TRV57/TRV67/TRV87

Canadian Model

CCD-TR517/TRV17/TRV37/TRV57/TRV87

E Model

*CCD-TR317/TR517/TRV37/
TRV47/TRV57/TRV57P/
TRV67/TRV87/TRV87P*

Hong Kong Model

Korea Model

*CCD-TR317/TRV47/TRV57/
TRV67/TRV87*

Brazilian Model

CCD-TR317/TR517/TRV37/TRV67

Argentina Model

CCD-TR517/TRV37/TRV67

Tourist Model

CCD-TRV47/TRV57/TRV67/TRV87

SUPPLEMENT-1

File this supplement-1 with the Service Manual.

- Type C of LCD unit is added to the conventional Type S of LCD unit.

Subject: 1. Addition of the LCD unit.
2. Changed Schematic Diagrams.

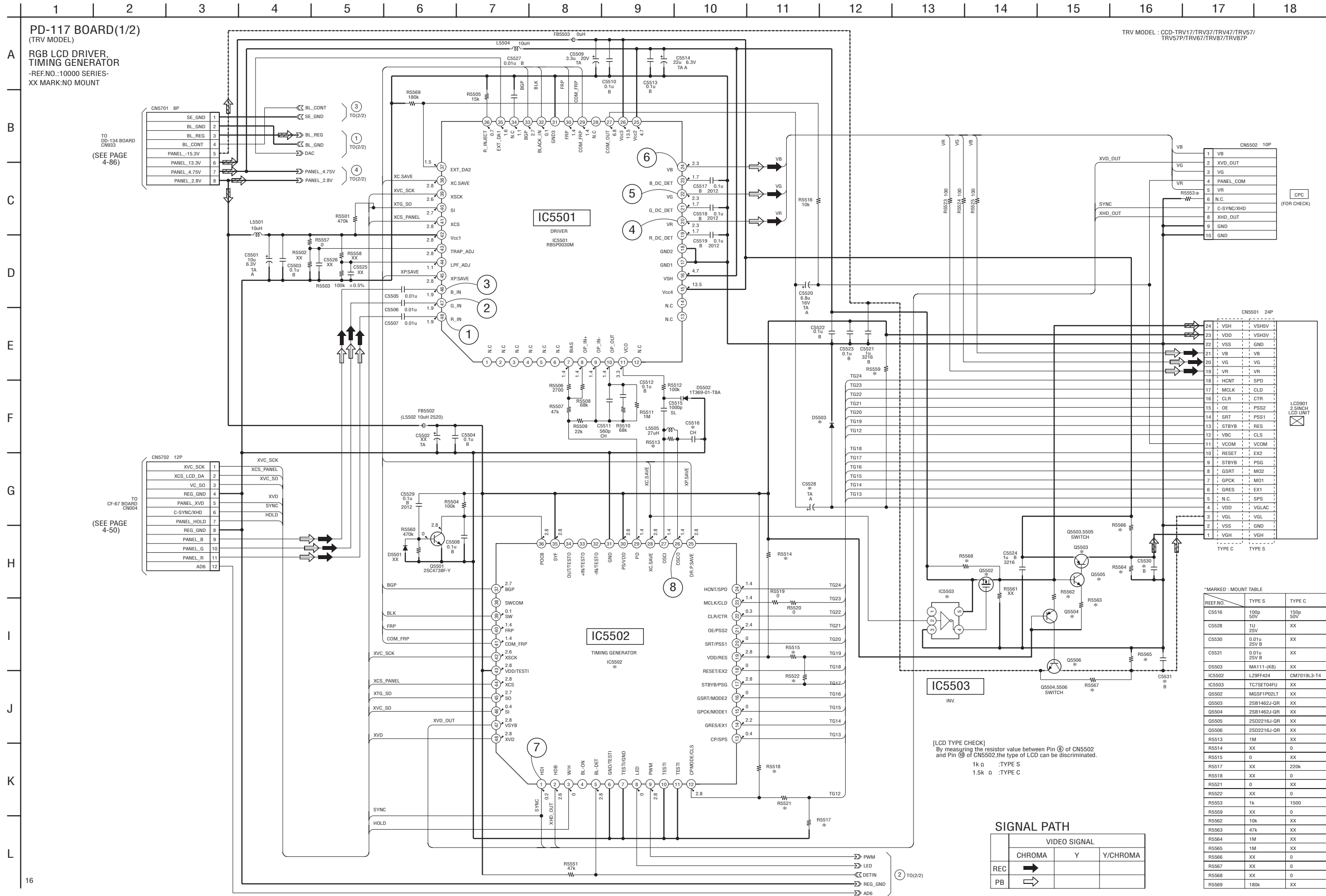
(PV00-013)

Note: For the method of identifying the Types of LCD, refer to page 5-34 for "1-6. LCD SYSTEM ADJUSTMENT. LCD Type check" of original Service Manual (9-974-195-11).

CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

For Schematic Diagram

- Refer to page 4-71 for printed wiring board.
- Refer to page 4-96 for waveforms.



*MARKED : MOUNT TABLE

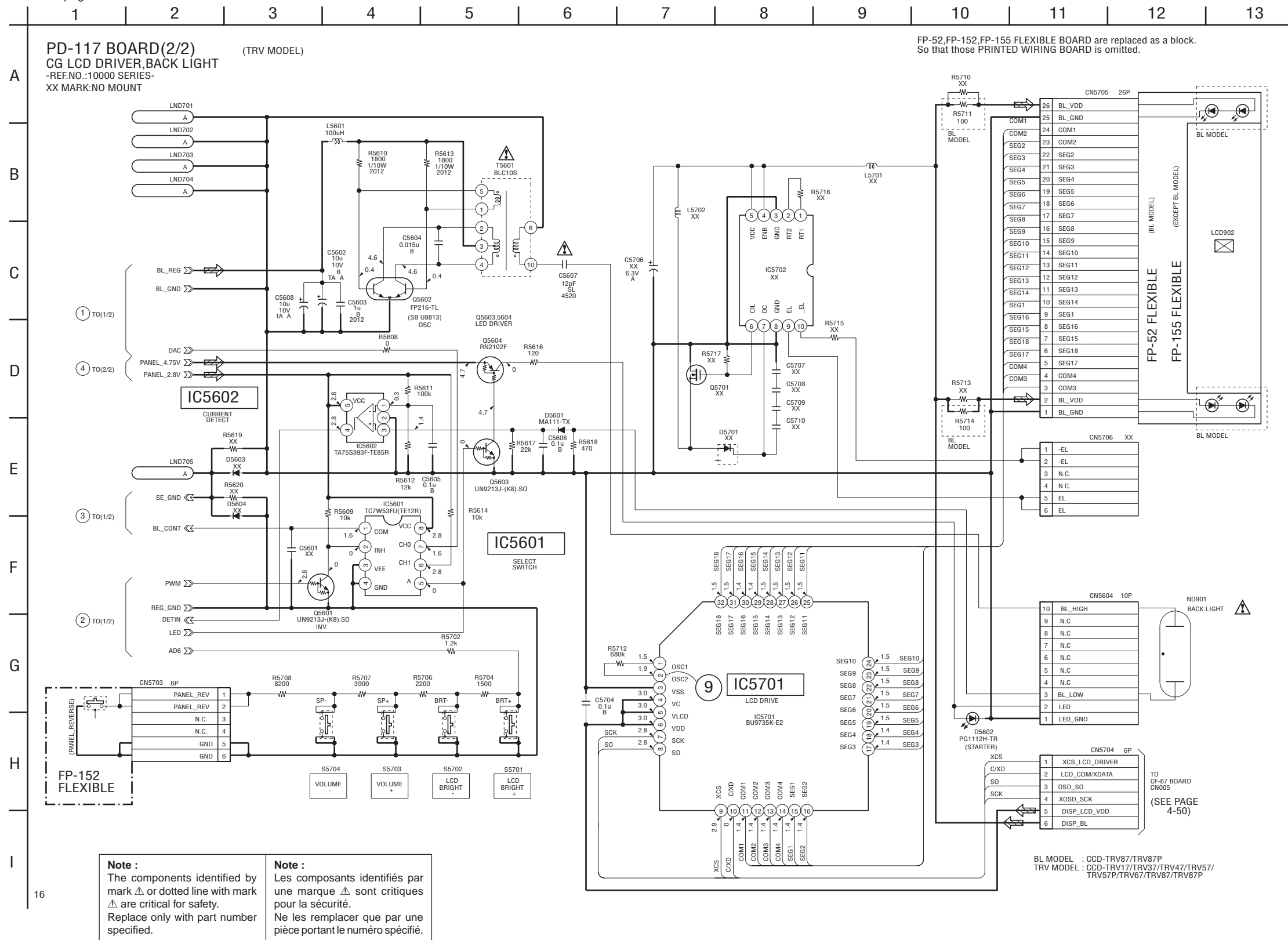
REF.NO.	TYPE S	TYPE C
C5516	100p	150p
C5528	1u	XX
C5530	0.01u	XX
C5531	0.01u	XX
D5503	MA111-(K8)	XX
IC5502	L29F424	CM7019L3-T4
IC5503	TC7SE104FU	XX
Q5502	MGSF1P02LT	XX
Q5503	2SB1462J-QR	XX
Q5504	2SB1462J-QR	XX
Q5505	2SD2216J-QR	XX
Q5506	2SD2216J-QR	XX
R5513	1M	XX
R5514	XX	0
R5515	0	XX
R5517	XX	220k
R5518	XX	0
R5521	0	XX
R5522	XX	0
R5553	1k	1500
R5559	XX	0
R5562	10k	XX
R5563	47k	XX
R5564	1M	XX
R5565	1M	XX
R5566	XX	0
R5567	XX	0
R5568	XX	0
R5569	180k	XX

SIGNAL PATH

REC	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
→			
←			
↔			

For Schematic Diagram

- Refer to page 4-71 for printed wiring board.
- Refer to page 4-96 for waveform.



16

SECTION 6. REPAIR PARTS LIST

6-1. EXPLODED VIEWS

: Added portion. : Changed portion.

Page	Before Addition				After Addition			
6-4	6-1-4. LCD BLOCK ASSEMBLY (TRV MODEL) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)				6-1-4. LCD BLOCK ASSEMBLY (TRV MODEL) (TRV17/TRV37/TRV47/TRV57/TRV57P/ TRV67/TRV87/TRV87P)			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
					157	A-7074-141-A	PD-117 (P-VLO) BOARD, COMPLETE (TYPE C)	
	157	A-7074-229-A	PD-117 (N-SH) BOARD, COMPLETE		157	A-7074-229-A	PD-117 (N-SH) BOARD, COMPLETE (TYPE S)	
	168	1-803-844-81	DISPLAY PANEL, LIQUID CRYSTAL (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)		168	1-803-844-81	DISPLAY PANEL, LIQUID CRYSTAL (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67)	
	LCD901	1-803-852-31	INDICATOR MODULE, LIQUID CRYSTAL		LCD901	1-803-852-21	INDICATOR MODULE, LIQUID CRYSTAL (TYPE S)	
					LCD901	1-803-859-21	INDICATOR MODULE, LIQUID CRYSTAL (TYPE C)	
	△LED901	1-517-858-11	LIGHT, BACK (TRV87/TRV87P)		△LED901	1-517-858-11	LIGHT, BACK (TRV87/TRV87P)	
	△ND901	1-517-752-31	TUBE, FLUORESCENT, COLD CATHODE		△ND901	1-517-752-31	TUBE, FLUORESCENT, COLD CATHODE	
					For the method of identifying the Type of LCD, refer to page 5-34 for "1-6. LCD SYSTEM ADJUSTMENT. LCD Type check" of original Service Manual (9-974-195-11).			
Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.		Note : Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.		Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.		Note : Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.		

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
A-7074-141-A		PD-117(P-VLO) BOARD, COMPLETE (TYPE C) *****		CN5702	1-779-064-11	PIN, CONNECTOR (PC BOARD) 12P	
A-7074-229-A		PD-117(N-SH) BOARD, COMPLETE (TYPE S) ***** (TRV17/TRV37/TRV47/TRV57/TRV57P/TRV67/TRV87/TRV87P) (Ref.No.:10000 Series)		CN5703	1-573-346-21	CONNECTOR, FFC/FPC 6P	
				CN5703	1-691-344-11	CONNECTOR, FFC/FPC (ZIF) 6P	
				* CN5703	1-778-154-21	CONNECTOR, FFC/FPC (ZIF) 6P	
				CN5704	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	
				CN5705	1-794-050-21	CONNECTOR, FFC/FPC (ZIF) 26P	
						< DIODE >	
C5501	1-127-688-21	TANTAL. CHIP 10uF 20% 6.3V		D5502	8-713-102-80	DIODE 1T369-01-T8A	
C5503	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		D5503	8-719-073-01	DIODE MA111-(K8).S0 (TYPE S)	
C5504	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		D5601	8-719-073-01	DIODE MA111-(K8).S0	
C5505	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V		D5602	8-719-062-44	DIODE PG1112H-TR	
C5506	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V				< FERRITE BEAD >	
C5507	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V		FB5502	1-500-329-11	INDUCTOR CHIP 0UH	
C5508	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		FB5503	1-500-329-11	INDUCTOR CHIP 0UH	
C5509	1-107-687-11	TANTAL. CHIP 3.3uF 20% 20V				< IC >	
C5510	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		IC5501	8-759-660-92	IC RB5P003AM1	
C5511	1-164-739-11	CERAMIC CHIP 560PF 5% 50V		IC5502	8-759-660-91	IC LZ9FF424 (TYPE S)	
C5512	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		IC5502	8-759-591-93	IC CM7019L3-T4 (TYPE C)	
C5513	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		IC5503	8-759-478-92	IC TC7SET04FU(TE85R) (TYPE S)	
C5514	1-119-750-11	TANTAL. CHIP 22uF 20% 6.3V		IC5601	8-759-564-49	IC TC7W53FU(TE12R)	
C5515	1-164-357-11	CERAMIC CHIP 1000PF 5% 50V		IC5602	8-759-277-98	IC TA75S393F-TE85R	
C5516	1-162-927-11	CERAMIC CHIP 100PF 5% 50V (TYPE S)		IC5701	8-759-573-02	IC BU9735K-E2	
C5516	1-164-217-11	CERAMIC CHIP 150PF 5% 50V (TYPE C)				< COIL >	
C5517	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		L5501	1-469-525-91	INDUCTOR 10uH	
C5518	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		L5504	1-469-525-91	INDUCTOR 10uH	
C5519	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		L5505	1-412-956-21	INDUCTOR 27uH	
C5520	1-113-994-11	TANTAL. CHIP 6.8uF 20% 16V		L5601	1-419-387-21	INDUCTOR 100uH	
C5521	1-107-682-11	CERAMIC CHIP 1uF 10% 16V				< TRANSISTOR >	
C5522	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		Q5501	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)	
C5523	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		Q5502	8-729-041-23	TRANSISTOR MGSF1P02LT1 (TYPE S)	
C5524	1-107-682-11	CERAMIC CHIP 1uF 10% 16V		Q5503	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3) (TYPE S)	
C5527	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V		Q5504	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3) (TYPE S)	
C5528	1-135-177-21	TANTALUM CHIP 1uF 20% 25V (TYPE S)		Q5505	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TYPE S)	
C5529	1-107-725-11	CERAMIC CHIP 0.1uF 10% 16V		Q5506	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TYPE S)	
C5530	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TYPE S)		Q5601	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
C5531	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TYPE S)		Q5602	8-729-039-43	TRANSISTOR FP216-TL	
C5602	1-125-822-11	TANTAL CHIP 10uF 10% 10V		Q5603	8-729-042-29	TRANSISTOR RN1104F(TPL3)	
C5603	1-109-982-11	CERAMIC CHIP 1uF 10% 10V		Q5604	8-729-042-58	TRANSISTOR RN2102F(TPL3)	
C5604	1-164-657-11	CERAMIC CHIP 0.015uF 10% 50V				< RESISTOR >	
C5605	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		R5501	1-216-853-11	METAL CHIP 470K 5% 1/16W	
C5606	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		R5503	1-218-895-11	METAL CHIP 100K 0.5% 1/16W	
△C5607	1-131-959-91	CERAMIC CHIP 12PF 10% 3KV		R5504	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C5608	1-125-822-11	TANTAL. CHIP 10uF 20% 10V		R5505	1-216-835-11	METAL CHIP 15K 5% 1/16W	
C5704	1-107-826-91	CERAMIC CHIP 0.1uF 10% 16V		R5506	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
						< CONNECTOR >	
CN5501	1-573-364-11	CONNECTOR, FFC/FPC 24P					
CN5501	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P					
* CN5502	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P					
CN5604	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P					
CN5701	1-779-893-11	PIN, CONNECTOR (PC BOARD) 8P					

Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	Note : Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R5507	1-216-841-11	METAL CHIP	47K 5% 1/16W	R5616	1-216-810-11	METAL CHIP	120 5% 1/16W
R5508	1-216-843-11	METAL CHIP	68K 5% 1/16W	R5617	1-216-837-11	METAL CHIP	22K 5% 1/16W
R5509	1-216-837-11	METAL CHIP	22K 5% 1/16W	R5618	1-216-817-11	METAL CHIP	470 5% 1/16W
R5510	1-216-843-11	METAL CHIP	68K 5% 1/16W	R5702	1-216-822-11	METAL CHIP	1.2K 5% 1/16W
R5511	1-216-857-11	METAL CHIP	1M 5% 1/16W	R5704	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
R5512	1-216-845-11	METAL CHIP	100K 5% 1/16W	R5706	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R5513	1-216-857-11	METAL CHIP	1M 5% 1/16W (TYPE S)	R5707	1-216-828-11	METAL CHIP	3.9K 5% 1/16W
R5514	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE C)	R5708	1-216-832-11	METAL CHIP	8.2K 5% 1/16W
R5515	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE S)	R5711	1-216-809-11	METAL CHIP	100 5% 1/16W
R5516	1-216-833-91	RES-CHIP	10K 5% 1/16W	R5712	1-216-855-11	METAL CHIP	680K 5% 1/16W
R5517	1-216-849-11	METAL CHIP	220K 5% 1/16W (TYPE C)	R5714	1-216-809-11	METAL CHIP	100 5% 1/16W
R5518	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE C)	< SWITCH >			
R5519	1-216-864-11	METAL CHIP	0 5% 1/16W	S5701	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT +)	
R5520	1-216-864-11	METAL CHIP	0 5% 1/16W	S5702	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT -)	
R5521	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE S)	S5703	1-692-088-41	SWITCH, TACTILE (VOLUME +)	
R5522	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE C)	S5704	1-692-088-41	SWITCH, TACTILE (VOLUME -)	
R5523	1-216-809-11	METAL CHIP	100 5% 1/16W	< TRANSFORMER >			
R5524	1-216-809-11	METAL CHIP	100 5% 1/16W	△ T5601	1-435-226-11	TRANSFORMER, INVERTER	
R5525	1-216-809-11	METAL CHIP	100 5% 1/16W				
R5551	1-216-841-11	METAL CHIP	47K 5% 1/16W				
R5553	1-216-821-11	METAL CHIP	1K 5% 1/16W (TYPE S)				
R5553	1-216-823-11	METAL CHIP	1.5K 5% 1/16W (TYPE C)				
R5557	1-216-864-11	METAL CHIP	0 5% 1/16W				
R5559	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE C)				
R5560	1-216-853-11	METAL CHIP	470K 5% 1/16W				
R5562	1-216-833-91	RES-CHIP	10K 5% 1/16W (TYPE S)				
R5563	1-216-841-11	METAL CHIP	47K 5% 1/16W (TYPE S)				
R5564	1-216-857-11	METAL CHIP	1M 5% 1/16W (TYPE S)				
R5565	1-216-857-11	METAL CHIP	1M 5% 1/16W (TYPE S)				
R5566	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE C)				
R5567	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE C)				
R5568	1-216-864-11	METAL CHIP	0 5% 1/16W (TYPE C)				
R5569	1-216-848-11	METAL CHIP	180K 5% 1/16W (TYPE S)				
R5608	1-216-864-11	METAL CHIP	0 5% 1/16W				
R5609	1-216-833-91	RES-CHIP	10K 5% 1/16W				
R5610	1-216-055-00	METAL CHIP	1.8K 5% 1/10W				
R5611	1-216-845-11	METAL CHIP	100K 5% 1/16W				
R5612	1-216-834-11	METAL CHIP	12K 5% 1/16W				
R5613	1-216-055-00	METAL CHIP	1.8K 5% 1/10W				
R5614	1-216-833-91	RES-CHIP	10K 5% 1/16W				

<p>Note : The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.</p>	<p>Note : Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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**CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P**

SONY®

SERVICE MANUAL

2000. 11

US Model
 CCD-TR517/TRV37/TRV57/TRV67/TRV87

Canadian Model
 CCD-TR517/TRV17/TRV37/TRV57/TRV87

E Model
 CCD-TR317/TR517/TRV37/
 TRV47/TRV57/TRV57P/
 TRV67/TRV87/TRV87P

Hong Kong Model
Korea Model

CCD-TR317/TRV47/TRV57/
 TRV67/TRV87

Brazilian Model
 CCD-TR317/TR517/TRV37/TRV67

Argentina Model
 CCD-TR517/TRV37/TRV67

Tourist Model
 CCD-TRV47/TRV57/TRV67/TRV87

CORRECTION-1

Correct your service manual as shown below.
 (PV00-018)

Subject:
 Change of panel name.

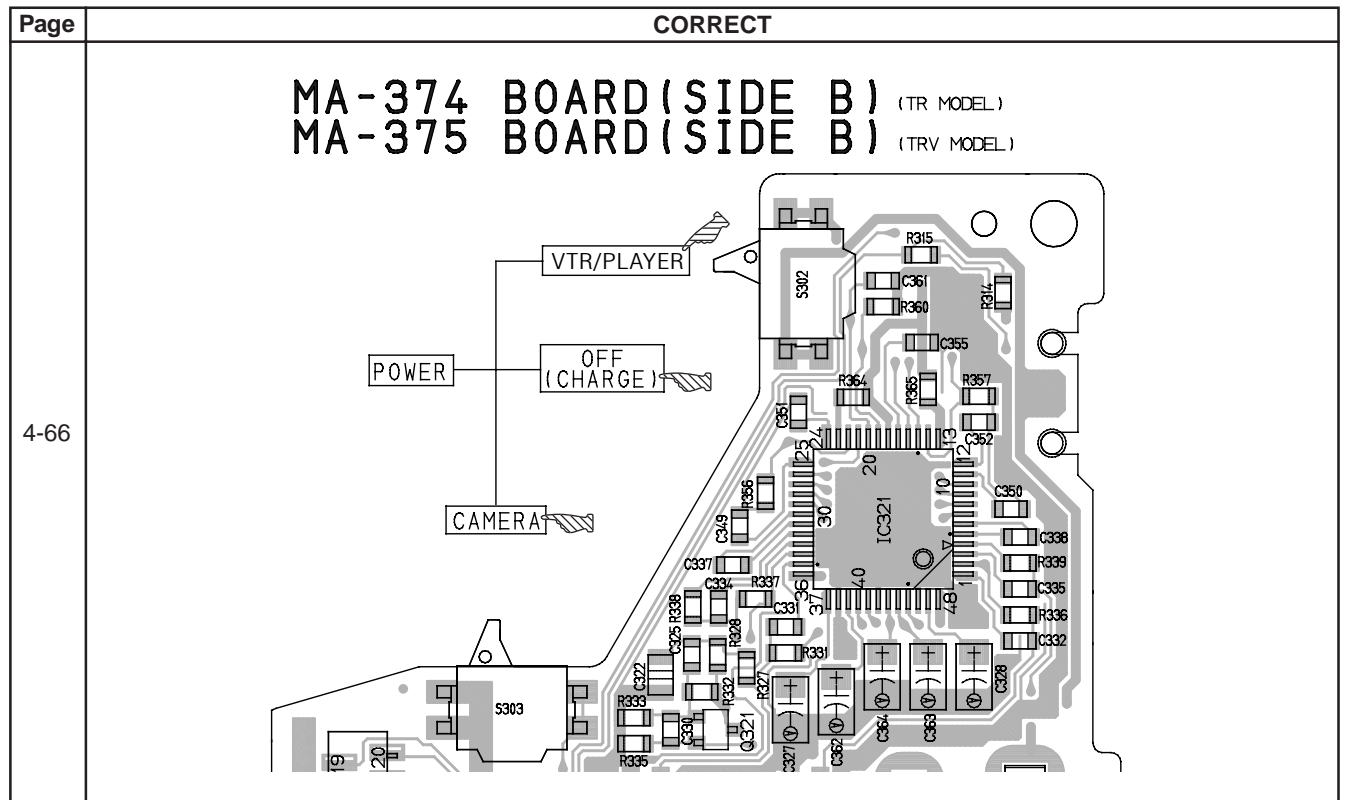
SECTION 4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

MA-374/375 (MIC AMP) PRINTED WIRING BOARD

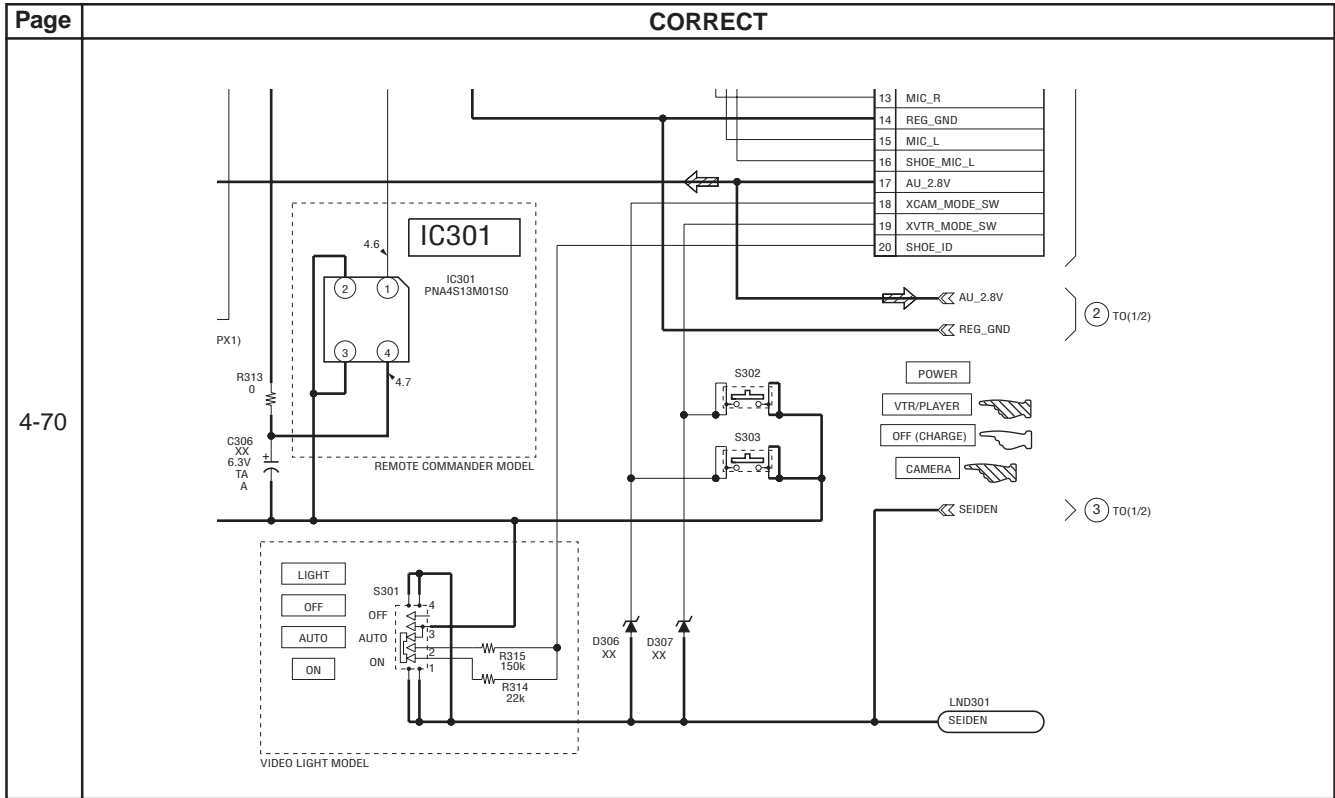
— Ref. No. MA-374/375 Board; 3,000 Series —

: Changed portion.



CCD-TR317/TR517/TRV17/TRV37/TRV47/
TRV57/TRV57P/TRV67/TRV87/TRV87P

: Added portion. : Changed portion.



SECTION 6. REPAIR PARTS LIST

6-2. ELECTRICAL PARTS LIST

: Changed portion.

Page	INCORRECT				CORRECT			
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks	
6-18	< SWITCH >				< SWITCH >			
	S302	1-771-331-51	SWITCH, PUSH (1 KEY) (PLAYER ON)		S302	1-771-331-51	SWITCH, PUSH (1 KEY) (VTR/PLAYER)	
	S303	1-771-331-21	SWITCH, PUSH (1 KEY) (CAMERA ON)		S303	1-771-331-71	SWITCH, PUSH (1 KEY) (CAMERA)	
6-20	< SWITCH >				< SWITCH >			
	S301	1-692-605-11	SWITCH, SLIDE (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)		S301	1-692-605-11	SWITCH, SLIDE (TRV17/TRV37/TRV57/TRV57P/TRV67/TRV87/TRV87P)	
	S302	1-771-331-51	SWITCH, PUSH (1 KEY) (VTR ON or PLAYER ON)		S302	1-771-331-51	SWITCH, PUSH (1 KEY) (VTR/PLAYER)	
	S303	1-771-331-21	SWITCH, PUSH (1 KEY)(CAMERA ON)		S303	1-771-331-71	SWITCH, PUSH (1 KEY) (CAMERA)	

Revision History

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	1999.12	Official Release	—	—
1.1	2000.10	Supplement-1	Addition of the LCD unit. Changed Schematic Diagrams.	No
1.2	2000.11	Correction-1	Change of panel name. S.M. correction: Page 4-66 , 4-70 , 6-18 , 6-20	Yes
1.3	2001.09	Correction-2 (PV01-015)	Error correction S.M. correction: Page 6-8 , 6-35	Yes
1.4	2004.05	Correction-3	Parts change due to termination of production of the IC. S.M. correction: Page 4-11 , 4-12 , 5-13 , 5-15 , 5-17 , 6-28 , 6-29	Yes